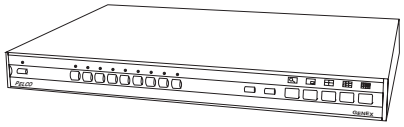

MX4000
Genex® Series
Simplex and Duplex
Multiplexers

Installation/
Operation Manual

C1920M-D (4/03)

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IMPORTANT SAFEGUARDS AND WARNINGS

Prior to installation and use of this product, the following WARNINGS should be observed.

1. Installation and servicing should only be done by qualified service personnel and conform to all local codes.

2. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.

3. Only use replacement parts recommended by Pelco.

4. After replacement/repair of this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.

5. Unit shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, should be placed on the unit.

6. Product ID label is located on the bottom of this unit. Please refer to product ID label for important operating information.

Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

DESCRIPTION

WHAT IS A VIDEO MULTIPLEXER?

A multiplexer lets you record pictures from up to 16 cameras on a single time-lapse VCR. You can also watch up to 16 cameras simultaneously on one screen, either live or in playback. For closer detail, you can choose full-screen viewing without losing detail (as occurs with "quad" devices that compress four pictures into one for recording).

The multiplexer acts as an interface between the CCTV cameras and the time-lapse VCR. It switches between cameras much like a sequential switcher, except a multiplexer must switch at exactly the same rate as the VCR is recording so just one video picture (field) is recorded from each camera before it switches to the next camera. The reason is that, with several cameras, you need to switch as quickly as possible to minimize the time gap between successive pictures from a particular camera.

Time-lapse VCRs are similar to home VHS recorders except time-lapse VCRs can record as many as 960 hours of video on a single T-120 (two-hour) VHS cassette. Even the lowest cost models have longer recording times than a normal consumer VCR.

If you connect one camera to a multiplexer and record at two-hour speed on a time-lapse recorder, motion appears normal when you play the tape. But as you add more cameras to the multiplexer, it must switch between cameras, allowing a gap in the pictures recorded for any one camera. The more cameras, the longer the gap. Motion on playback becomes jerky because of missing video.

Not only does the number of cameras affect the time gap, so does recording speed. The slower the speed, the longer the gap. Normal recording speed for full motion is two-hour mode. Recording 12, 48, or 960 hours of video on a two-hour tape means a lot of video is left out.

Thus, the more cameras and the slower the recording speed, the longer the time gap between recorded pictures for each camera. Also, having both black and white and color cameras together in a system—rather than just one kind—slows switching. Important video could be lost.

GENEX SERIES MULTIPLEXERS

The MX4000 Genex® Series simplex and duplex multiplexers can accept video inputs from a maximum of 9 or 16 cameras, depending on model. You can work in any of four languages: English (default), French, German, or Spanish.

Duplex multiplexers let you view live video while simultaneously recording or playing tapes using standard or time-lapse VCRs.

Simplex multiplexers have three operating modes:

- Live—The main monitor can show live video both in full-screen or multiple-screen views. You cannot record in live mode.
- Record—The main monitor shows live video of an individual camera in full-screen view only. You can record only in record mode. While recording, all cameras are being recorded simultaneously.
- VCR—The main monitor displays full-screen or multiple-screen views of videotape playback. You cannot record in VCR mode.

Simplex multiplexers can show video from the cameras on two monitors (main and spot) while duplex multiplexers can show video from the cameras on three monitors (main, spot, and auxiliary).

- The main monitor displays video from a single camera or from multiple cameras. Video can be either live or from a tape playback. Multiple-screen displays can be picture-in-picture, 4-, 9-, or 16-camera formats.
- A spot monitor displays live video from a single camera. A spot monitor is optional, but increases the flexibility of your system. For example, you can keep an eye on all cameras in a multiple-screen format on the main monitor while watching a full-screen view of any one camera on the spot monitor. Or, if you are playing a tape on the main monitor, you can use the spot monitor to watch live video.
- An auxiliary monitor also displays live video from a single camera. It also is optional, but further expands the flexibility of your system. Again, you can keep an eye on all cameras in a multiple-screen format on the main monitor while watching a full-screen view of any one camera on the spot monitor. But suppose you are watching something on the spot monitor and you do not want an alarm to occur and override what you are watching on the spot monitor. Use the auxiliary monitor to display alarms.

Cameras can be sequenced on all monitors (the auxiliary monitor by programming only).

In full-screen view on the main monitor, a zoom function doubles or quadruples image size for better viewing. This works **only** in full-screen view.

Depending on model, there are 9 or 16 alarm inputs–one per camera–that tag the camera images when an alarm is activated. You can program main, spot, and auxiliary monitors to display alarms. Alarm inputs also activate a relay output, which can be used to change a VCR to its preprogrammed alarm record speed. When there is an alarm, the VCR (depending on how it is programmed) will either record alarm cameras only or record both alarm and non-alarm cameras. An alarm log lists the last 72 alarms.

Activity detection continually monitors selected camera inputs for activity. When the multiplexer detects activity, it increases the frequency at which it records cameras with activity. You can program main, spot, and auxiliary monitors to display cameras with activity.

APPLICATIONS

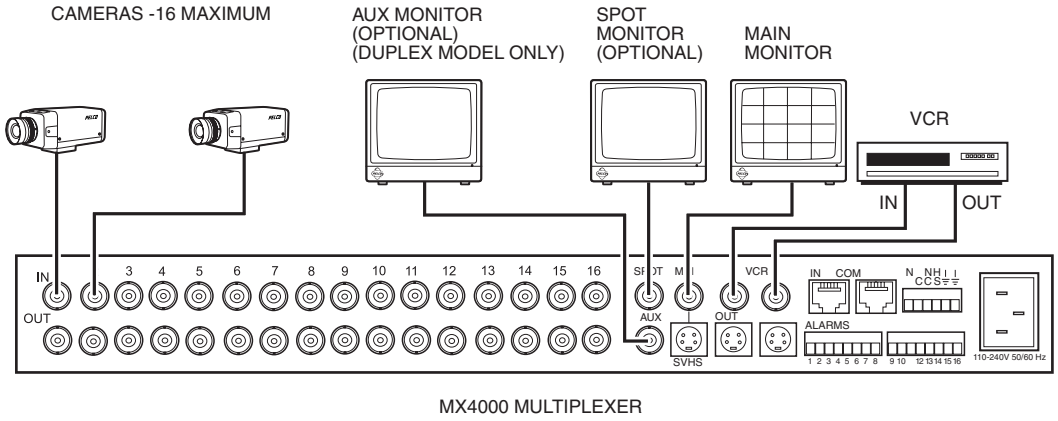


Figure 1. Stand-Alone Multiplexer

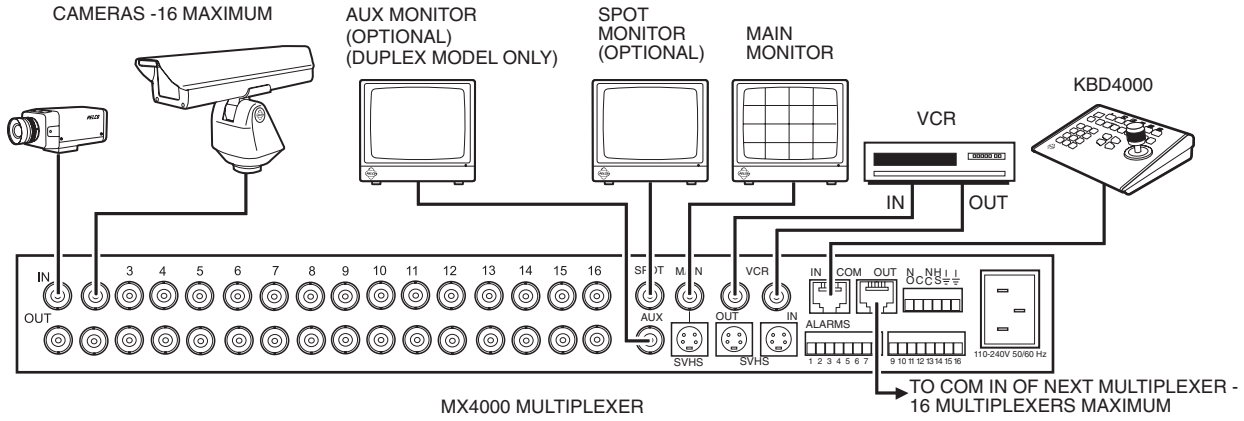


Figure 2. Multiplexer with KBD4000 Keyboard

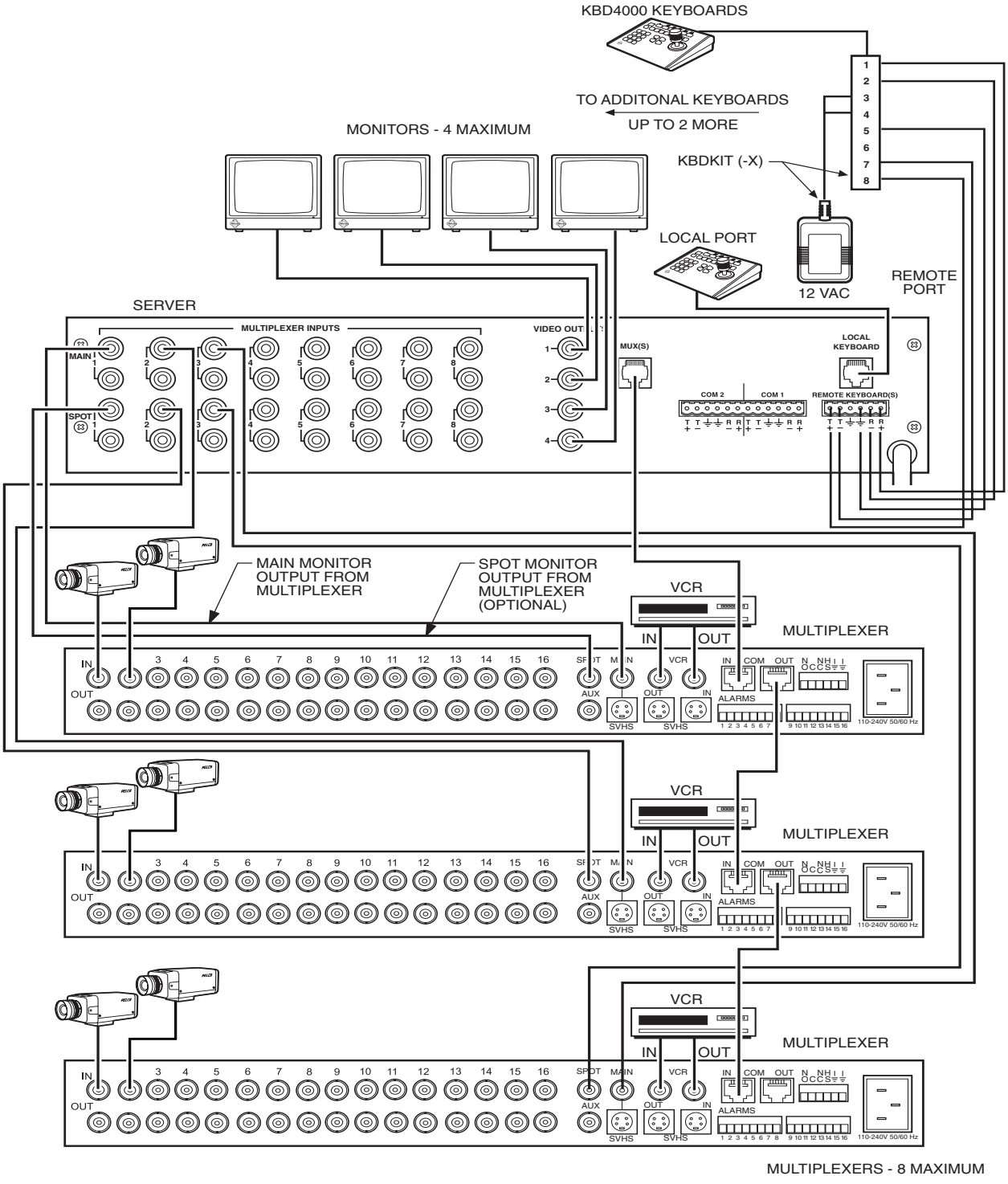


Figure 3. Multiplexers with KBD4000 Keyboards and MX4000SVR

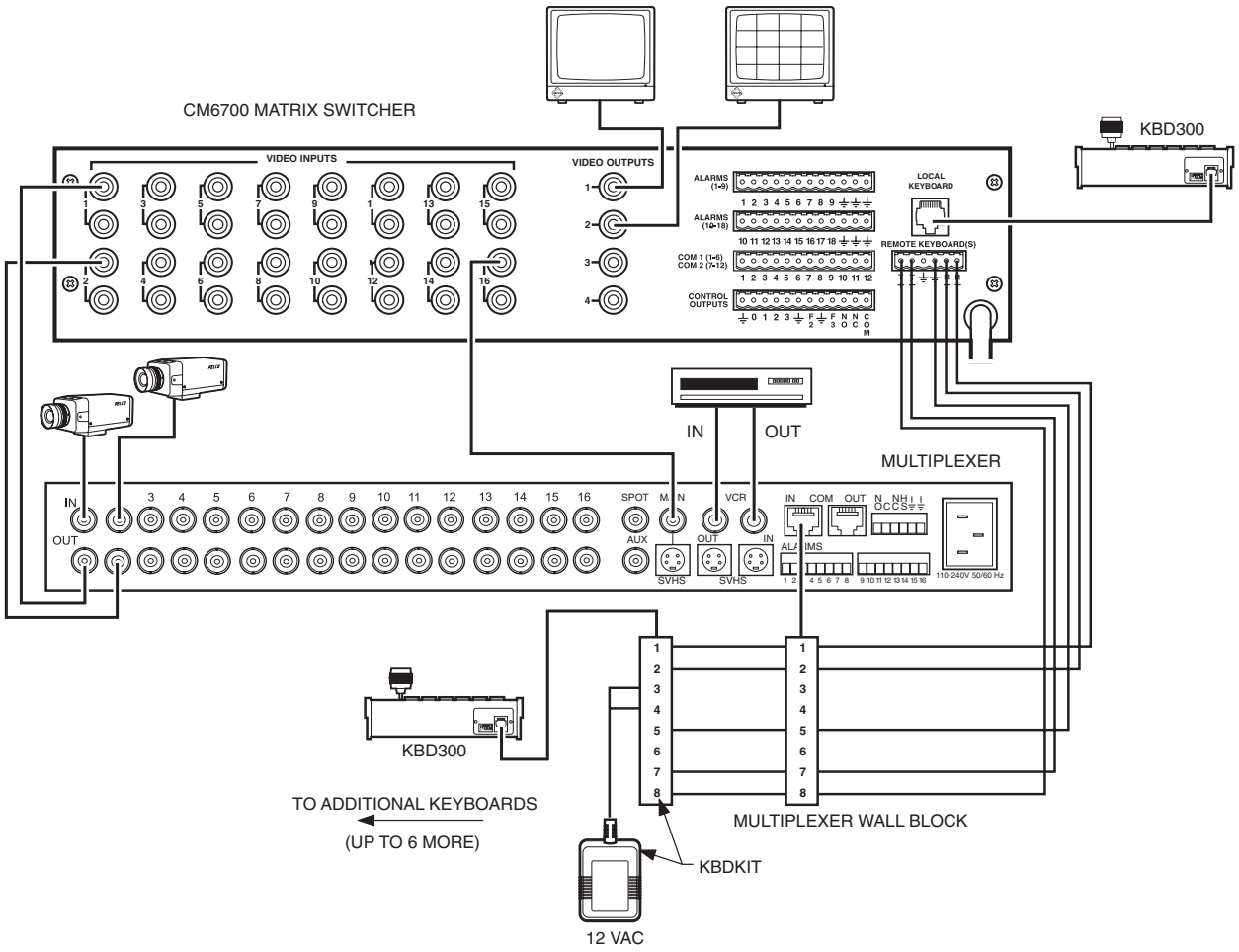


Figure 4. Duplex Multiplexer with CM6700 Matrix Switcher

NOTE: *The KBD4000 and KBD4002 keyboards in combination with a multiplexer provide Coaxitron control of pan, tilt, and lens functions.*

When used with 32-bit extended Coaxitron receivers, such as Intercept®, Spectra®, IRD/ERD2000 Series, and LRD41C21/LRD41C22 Series, the KBD4000/KBD4002 keyboard in conjunction with a multiplexer will support all pan, tilt, and lens functions; auxiliary on/off; and the setting and calling of presets and patterns. It will not support programming of labels for presets or patterns. If labels for presets or patterns are required, program them with a different control, such as the MPT9500.

The MX4000 Genex Series lets you configure your system in various ways.

The simplest system is a stand-alone multiplexer (Figure 1). Just connect cameras, monitors, a VCR, and alarm inputs. Front panel push buttons control the multiplexer.

By adding a KBD4000/KBD4002 keyboard to the multiplexer (Figure 2), you can control 1-16 multiplexers from up to 25 feet (7.6 m) away with the cable supplied with the keyboard. You can obtain greater distances between the multiplexer and the keyboard by providing a Pelco KBDKIT(-X) and your own cable.

A keyboard also lets you control moveable cameras. Control systems for moveable cameras must be Coaxitron® compatible. In Figure 1 cameras are fixed.

The systems shown in Figures 1 and 2 are for a single operator only. To permit up to four operators to use the system, add an MX4000SVR Multiplexer Server, as shown in Figure 3.

Main and spot monitor outputs from each multiplexer are connected to the server, providing two video channels. The design is not a true matrix, however, because only two operators (instead of all operators in a true matrix) can select cameras from the same multiplexer at the same time, one operator using the main monitor and the other operator using the spot monitor.

Duplex Multiplexer Only–If a true matrix configuration is necessary in which all operators can access a multiplexer, a matrix switcher (such as Pelco's CM6700) can be used. Refer to Figure 4. However, only one multiplexer can be used. In this example, looped video is from individual cameras; video from the main monitor can be either from individual cameras or from multiplexed cameras.

MODELS

Color Simplex

MX4009CS	9-channel, color simplex multiplexer, NTSC standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4009CS-X	Same as MX4009CS except PAL standard, 230 VAC, 50 Hz (CE, UL AR-S)
MX4016CS	16-channel, color simplex multiplexer, NTSC standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4016CS-X	Same as MX4016CS except PAL standard, 230 VAC, 50 Hz (CE, UL AR-S)

Color Duplex

MX4009CD	9-channel, color duplex multiplexer, NTSC standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4009CD-X	Same as MX4009CD except PAL standard, 230 VAC, 50 Hz (CE, UL AR-S)
MX4016CD	16-channel, color duplex multiplexer, NTSC standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4016CD-X	Same as MX4016CD except PAL standard, 230 VAC, 50 Hz (CE, UL AR-S)

Monochrome Simplex

MX4009MS	9-channel, monochrome simplex multiplexer, EIA RS-170 standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4009MS-X	Same as MX4009MS except CCIR standard, 230 VAC, 50 Hz (CE, UL AR-S)
MX4016MS	16-channel, monochrome simplex multiplexer, EIA RS-170 standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4016MS-X	Same as MX4016MS except CCIR standard, 230 VAC, 50 Hz (CE, UL AR-S)

Monochrome Duplex

MX4009MD	9-channel, monochrome duplex multiplexer, EIA RS-170 standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4009MD-X	Same as MX4009MD except CCIR standard, 230 VAC, 50 Hz (CE, UL AR-S)
MX4016MD	16-channel, monochrome duplex multiplexer, EIA RS-170 standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4016MD-X	Same as MX4016MD except CCIR standard, 230 VAC, 50 Hz (CE)

INSTALLATION

Unpack and inspect all parts carefully. The following parts are supplied:

- 1 MX4000 Series multiplexer
- 1 Rack ear kit
  - 2 Rack ears
  - 4 4-40 x .375-inch pan head screws
  - 4 10-32 x .750-inch pan head screws
- 1 Power cord
- 1 6-foot (1.8 m) data cable with RJ-45 connectors

❶ MOUNTING

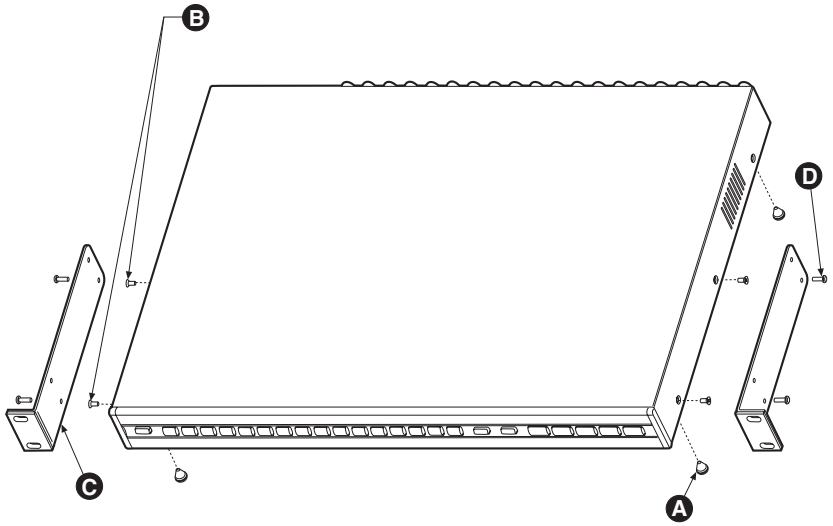


Figure 5. Rack Installation

Place the multiplexer on a flat surface or install it in a 19-inch (48.26 cm) equipment rack.

NOTE: *You will need to locate the multiplexer near an electrical outlet in order to initialize the unit (refer to step 9,* Powering the Multiplexer*). Mounting it in a rack may make this difficult.*

To install in an equipment rack:

1. Remove the four feet (A) beneath the unit.
2. Remove and discard the four flat-head screws (B).
3. Attach the rack ears (C) with supplied 4-40 x .375-inch screws (D). Only the two bottom holes on the rack ears are needed.
4. Install the multiplexer with the four supplied 10-32 x .750-inch screws.

❷ CAMERAS

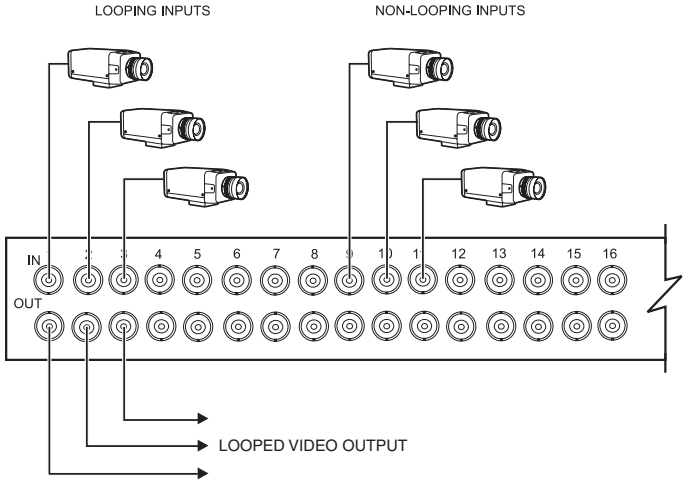


Figure 6. Camera Wiring Example

IMPORTANT: *Camera power should be wired in phase to all cameras. When cameras are sequenced, they will roll on the spot monitor (and on the auxiliary monitor with duplex models) if they are out of phase. On the main monitor, cameras are digitally time corrected and will not roll when sequenced if they are out of phase.*

Video inputs can come from any conventional source. No external camera synchronization is required. Table A shows the type of video coaxial cable to use.

To connect cameras (refer to Figure 6):

1. Connect the coaxial cables from your cameras or receivers to the IN connectors. If you are using moveable cameras, the receivers must be Coaxitron compatible.

   Stand-Alone Multiplexer – Connect fixed cameras to channel inputs.

   Multiplexer with KBD4000/KBD4002 – Connect fixed or moveable cameras to channel inputs.

   Multiplexer with KBD4000/KBD4002 and MX4000SVR Server – Connect fixed or moveable cameras to channel inputs.

   Multiplexer with CM6700 (Duplex Models Only) – Connect fixed or moveable cameras to the multiplexer first, and then loop them to the CM6700 (refer to Figure 4). Termination for each camera input at the multiplexer must be changed from 75 ohms to high impedance through programming. Refer to the *System Setup (View Button)* section to globally set termination or the *Camera Setup (Camera Button)* section to individually set termination.

2. If you want to loop a video signal out to another device, connect coaxial cables from the looping OUT connectors to the external equipment inputs, and program the camera's termination to looping (refer to the *Camera Setup [Camera Button]* section).

   Multiplexer with CM6700 (Duplex Models Only) – Loop the video outputs from the multiplexer to the VIDEO INPUTS of the CM6700 SCU.

Table A. Video Coaxial Cable Requirements

Cable Type*	Maximum Distance
RG59/U	750 ft (229 m)
RG6/U	1,000 ft (305 m)
RG11/U	1,500 ft (457 m)

* Minimum cable requirements:
75 ohms impedance
All-copper center conductor
All-copper braided shield with 95% braid coverage

❸ MONITORS

NOTE: *Skip this step if you are connecting your multiplexer to an MX4000SVR—or to a CM6700 SCU (duplex models only).*

Refer to Table A for the type of video coaxial cable to use.

Main Monitor – Connect the video input of your monitor to the multiplexer's MAIN output using standard BNC connector and coaxial cable.

If your color monitor supports SVHS, you can use a special SVHS cable between your monitor and the multiplexer.

Spot Monitor (Optional) – Connect your spot monitor to the SPOT output.

Auxiliary Monitor (Optional) (Duplex Models Only) – Connect your auxiliary monitor to the AUX output.

❹A VCR HOOKUP AND HEAD PULSE SWITCHING/PROGRAMMING

If you have a Pelco VCR, proceed to step 4B, *Pelco's Time-Lapse VCRs*.

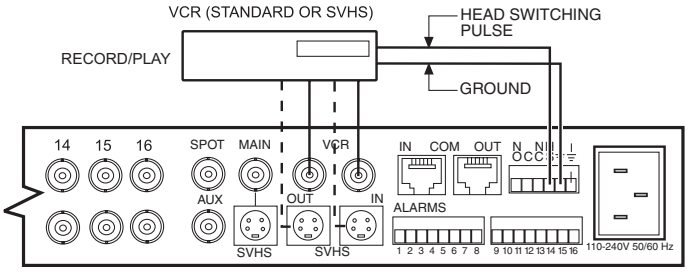


Figure 7. VCR Wiring Example, One VCR (Simplex and Duplex)

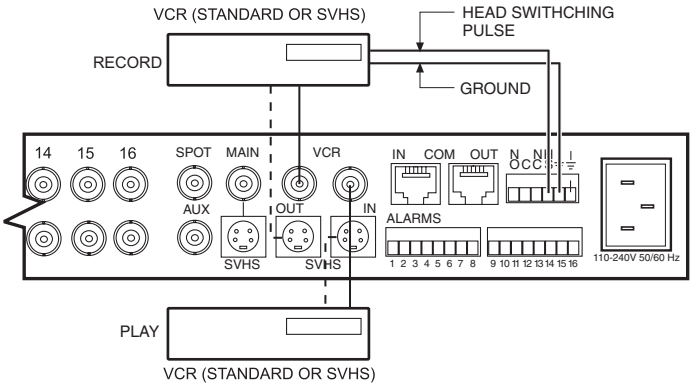


Figure 8. VCR Wiring Example, Two Separate VCRs (Duplex Models Only)

1. Connect the video to the multiplexer video inputs.

   For monochrome multiplexers, use standard VCRs. For color multiplexers, use standard or SVHS VCRs.

   For standard VCRs, use the BNC connectors (refer to Table A). For SVHS VCRs, use the SVHS connectors (use video cable designed for SVHS).

   Connecting One VCR (Simplex/Duplex Models)

   Refer to Figure 7.

   a. Connect VCR OUT on the multiplexer to the video IN on the VCR.
   b. Connect VCR IN on the multiplexer to the video OUT on the VCR.

   Connecting Two VCRs (Duplex Model Only)

   This configuration uses one VCR to record and another to play. Refer to Figure 8.

   a. Connect VCR OUT on the multiplexer to the video IN on the VCR on which you want to record.

   b. Connect VCR IN on the multiplexer to the video OUT on the VCR on which you want to play a tape.

2. The multiplexer's camera switching rate must match the VCR's recording speed. Use one of the two ways shown below:

   - **Head Switching Pulse** – This is the most reliable way to synchronize the multiplexer and VCR. The pulse from the VCR tells the multiplexer how fast to switch between cameras. (If you use this method, you do not need to program the rate; however, you must set VCR Switch Pulse to ENABLED + or ENABLED – [depending on whether the VCR sends a positive or negative pulse to activate recording] in the Record Setup menu.) You can pull the six-pin plug-in terminal block out of the connector on the back of the multiplexer to make wiring easier.

     Refer to Figure 7 or Figure 8 and connect HS and ground from the multiplexer to the VCR.

   - **Programming** – You can synchronize the VCR and multiplexer by programming the multiplexer switching rate to match the VCR's recording speed. No wiring is required. Refer to the *Programming* section.

Proceed to step 5, *Alarms*.

4B PELCO'S TIME-LAPSE VCRS

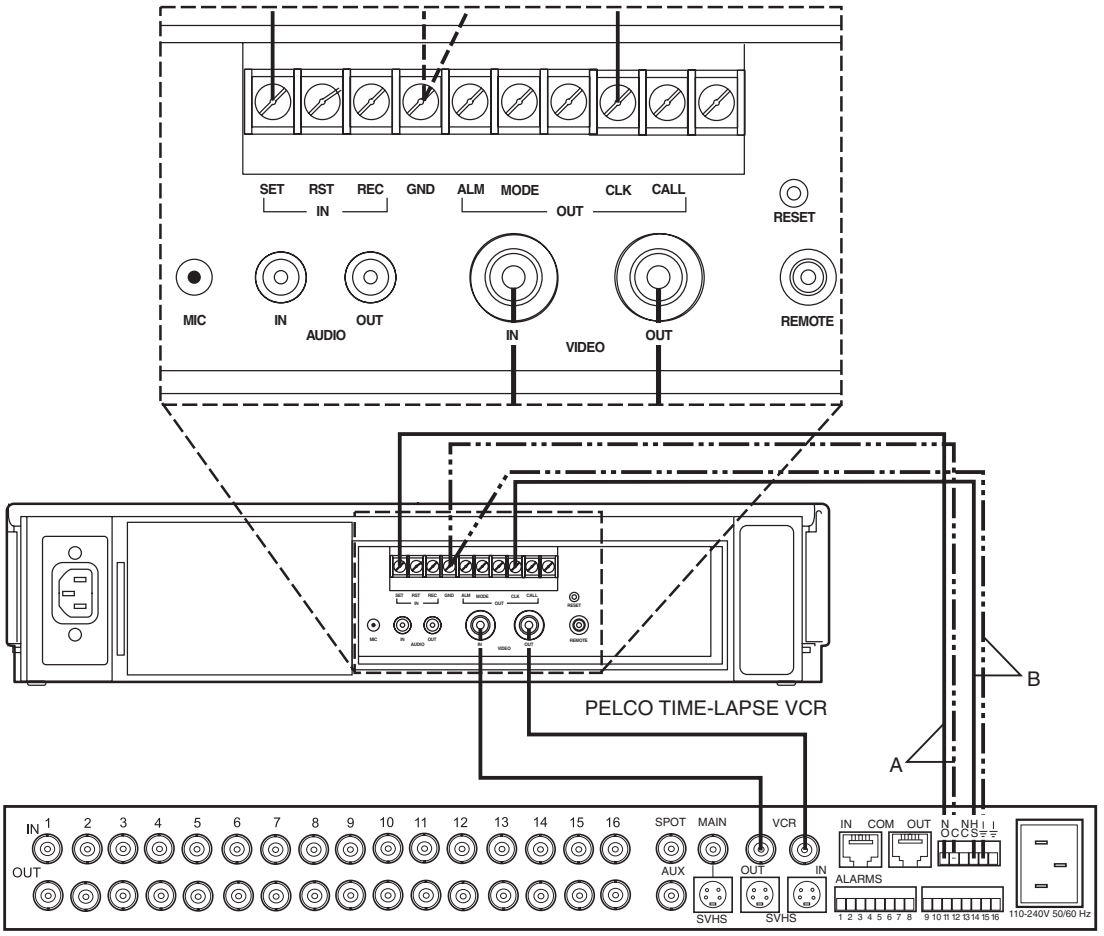


Figure 9. Pelco Time-Lapse VCR Wiring Example

To connect one of Pelco's Time-Lapse VCR Models TLR2024, TLR2096, TLR2168, or TLR2168S to the multiplexer (refer to Figure 9):

1. Connect BNC video cable between the VCR connectors on the multiplexer and the VIDEO connectors on the VCR.

2. Automatic Speed Tracking lets the VCR control the multiplexer's recording speed. It is the most efficient recording method. To wire (refer to the "B" lines in Figure 9):

   a. Connect the VCR's CLK output to the multiplexer's head switching (HS) input to synchronize camera switching.

   b. Connect the multiplexer's ground terminal to the VCR's GND terminal.

3. Alarm recording starts and stops when there are alarms. To wire (refer to the "A" lines in Figure 9):

   a. Connect the multiplexer's normally open (NO) relay terminal to the VCR's SET IN (alarm input) terminal.

   b. Connect the multiplexer's common (C) terminal to the VCR's GND terminal.

❺ ALARMS

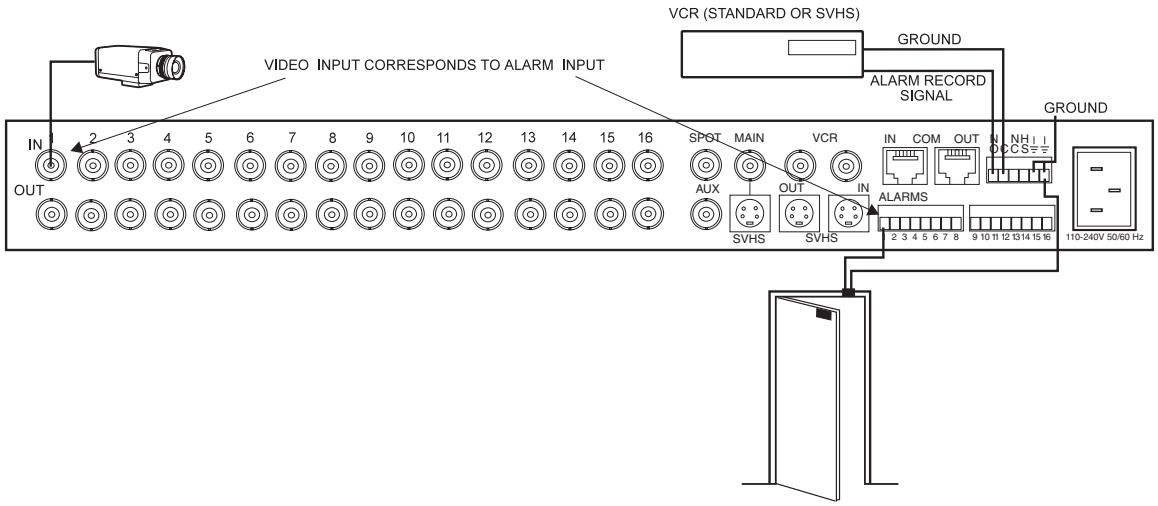

VCR (STANDARD OR SVHS)
GROUND
VIDEO INPUT CORRESPONDS TO ALARM INPUT
ALARM RECORD SIGNAL
GROUND
IN
OUT
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
SPOT MAIN VCR
AUX OUT IN
SVHS SVHS
IN COM OUT
ALARMS
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
110-240V 50/60 Hz

Figure 10. Alarm Wiring Example

Alarm inputs require a ground signal through a contact opening or closure, such as a switch or relay.

To wire the alarm inputs (refer to Figure 10):

1. Connect one wire from the alarm source (for example, door) to one of the alarm input pins of the multiplexer. The alarm input must correspond to the camera input. There is only one alarm input per camera.

   You can pull the eight-pin plug-in terminal blocks out of the connectors on the back of the multiplexer to make wiring easier.

2. Connect a second wire from the alarm source to one of the ground connections on the six-pin plug-in terminal block on the back of the multiplexer.

3. If your VCR has an alarm input to change the VCR to its alarm recording speed when the multiplexer receives an alarm, connect the VCR alarm input to the normally open (N.O.) relay contact on the multiplexer. Connect a wire from the relay's common (C) connection to ground on the VCR.

❻ (OPTIONAL) KBD4000/KBD4002 KEYBOARD

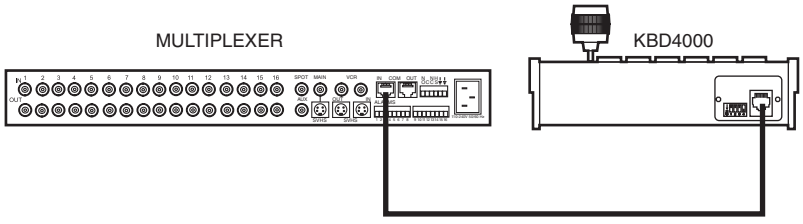


Figure 11. Connecting the Keyboard to the Multiplexer

6A SINGLE KEYBOARD

This installation is for a single keyboard plugged into a Genex multiplexer.

Refer to Figure 2 in the *Applications* section for an overview of a typical application.

1. Remove the DIP switch cover plate on the back of the keyboard. Set the DIP switches (refer to the keyboard manual). Replace the plate.

2. Plug the supplied 25-foot (7.6 m) cable into the back of the KBD4000/KBD4002 keyboard and into COM IN on the back of the multiplexer. Refer to Figure 11.

3. If you are going to daisy chain multiplexers (16 maximum), use the 6-foot (1.8 m) data cables supplied with the multiplexer (refer to bottom portion of Figure 14). Connect a cable from the first multiplexer's COM OUT port to the second multiplexer's COM IN port, then connect the second multiplexer's COM OUT port to the third multiplexer's COM IN port. Continue to unit 16 if necessary.

6B STAR CONFIGURATION OF MULTIPLEXERS

The CM9760-CDU-T can be used as a distribution unit for a star configuration of Genex Series multiplexers. Refer to Figure 12.

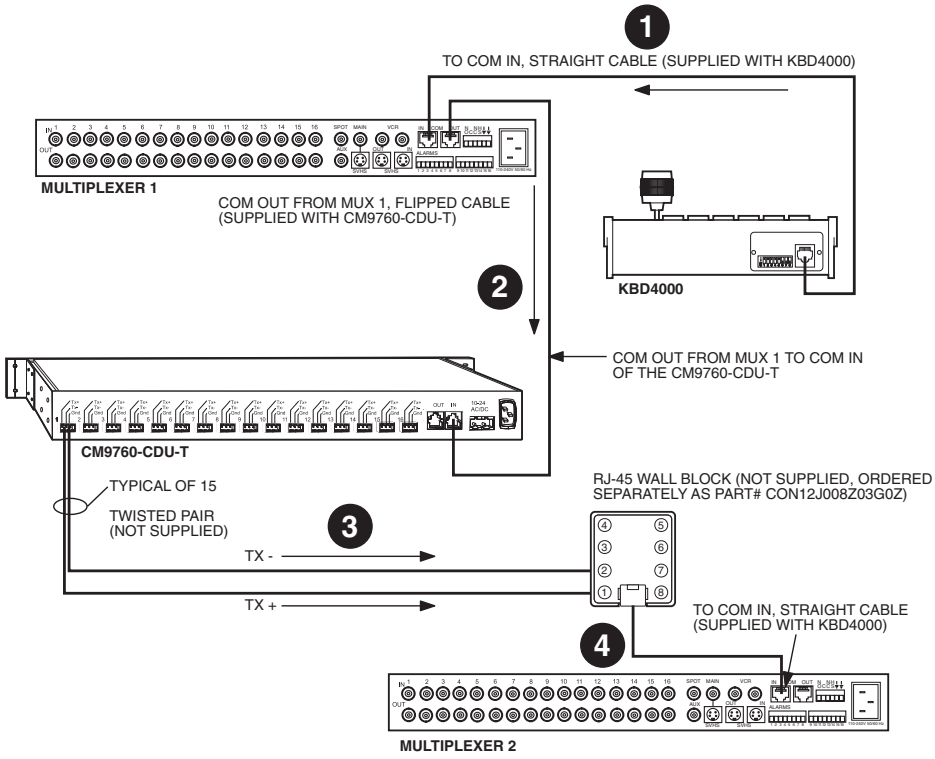


Figure 12. Star Configuration of Multiplexers

1. Connect the KBD4000/KBD40002 to the COM IN port of multiplexer 1 using a straight cable.

2. Connect the COM OUT port of multiplexer 1 to the COM IN port of the CM9760-CDU-T using a flipped cable.

3. Connect TX+ and TX- from the CM9760-CDU-T to pin 1 and pin 2 (respectively) on the RJ-45 wall block.

4. Connect the RJ-45 wall block to the COM IN port of multiplexer 2 using a straight cable.

5. Repeat steps 3 and 4 for connecting additional multiplexers to outputs 2-15 on the CM9760-CDU-T. Each multiplexer requires its own wall block.

❼ (OPTIONAL) MX4000SVR SERVER WITH KEYBOARDS

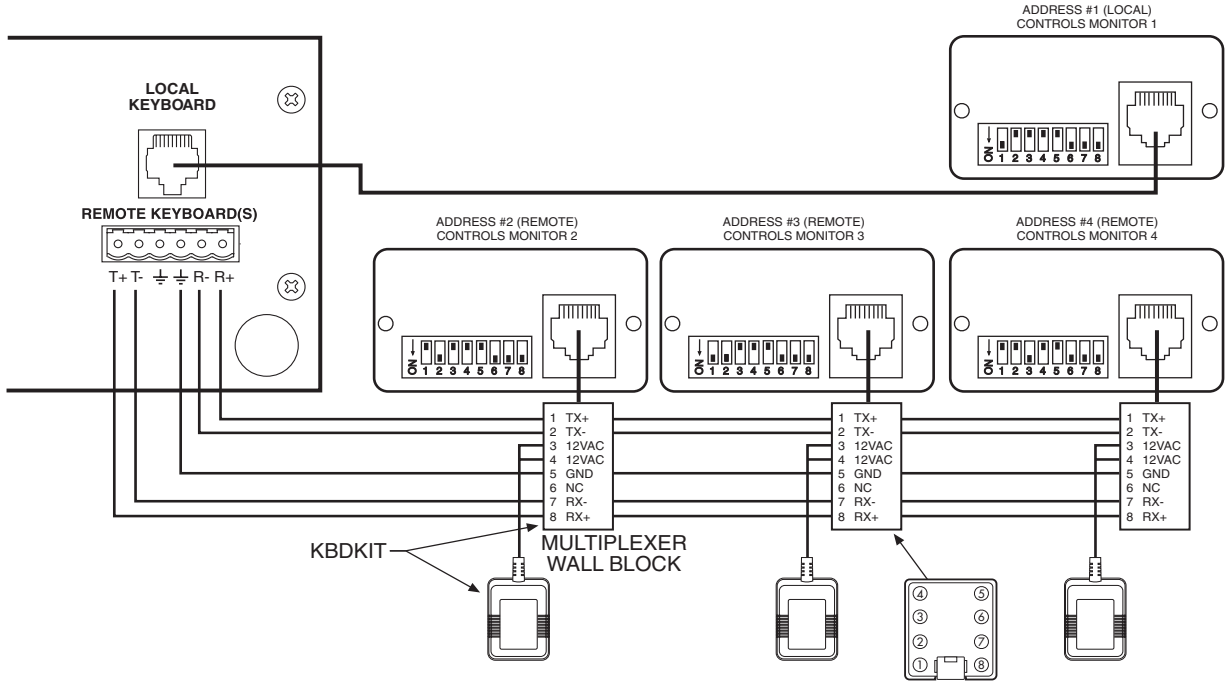


Figure 13. Connecting KBD4000/KBD4002 Keyboards to the Server

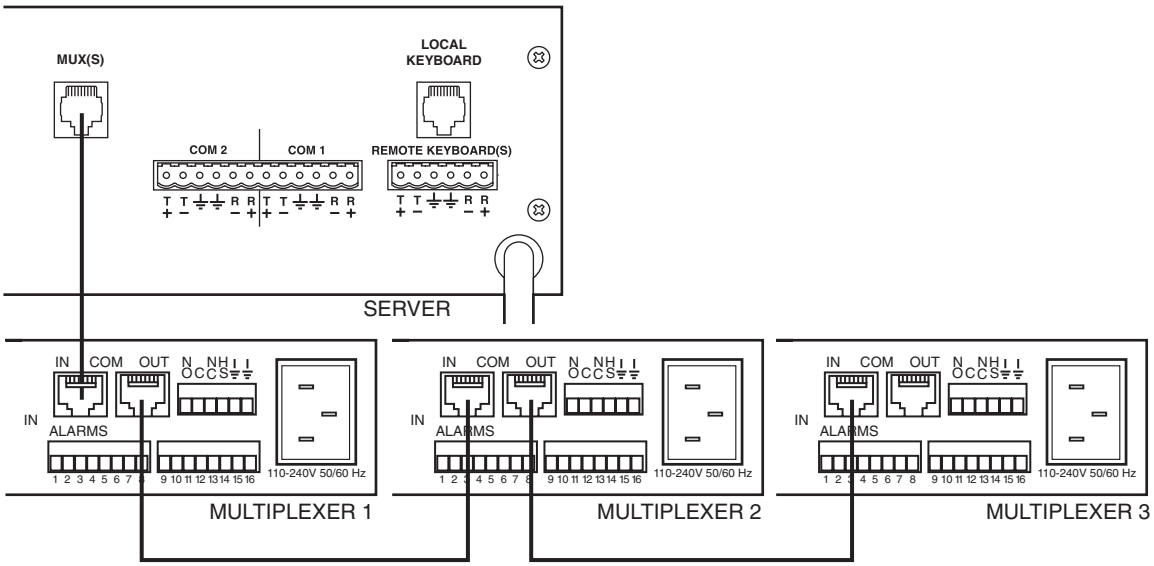


Figure 14. Daisy-Chaining Multiplexers to the Server

This installation is for up to four keyboards connected to a Genex MX4000SVR Multiplexer Server.

Refer to Figure 3 in the *Applications* section for an overview of a typical application.

1. Remove the DIP switch cover plates on the backs of the keyboards. Set the DIP switches (refer to Figure 13). Replace the plates.

2. Wire the keyboards as shown in Figure 13.

3. If you are going to daisy chain multiplexers (eight maximum), use the 6-foot (1.8 m) data cables supplied with the multiplexer (refer to Figure 14). Connect a cable from the first multiplexer's COM OUT port to the second multiplexer's COM IN port, then connect the second multiplexer's COM OUT port to the third multiplexer's COM IN port, etc. Continue to unit 8 if necessary.

⑧ (OPTIONAL) MULTIPLE MULTIPLEXERS WITH CM6800

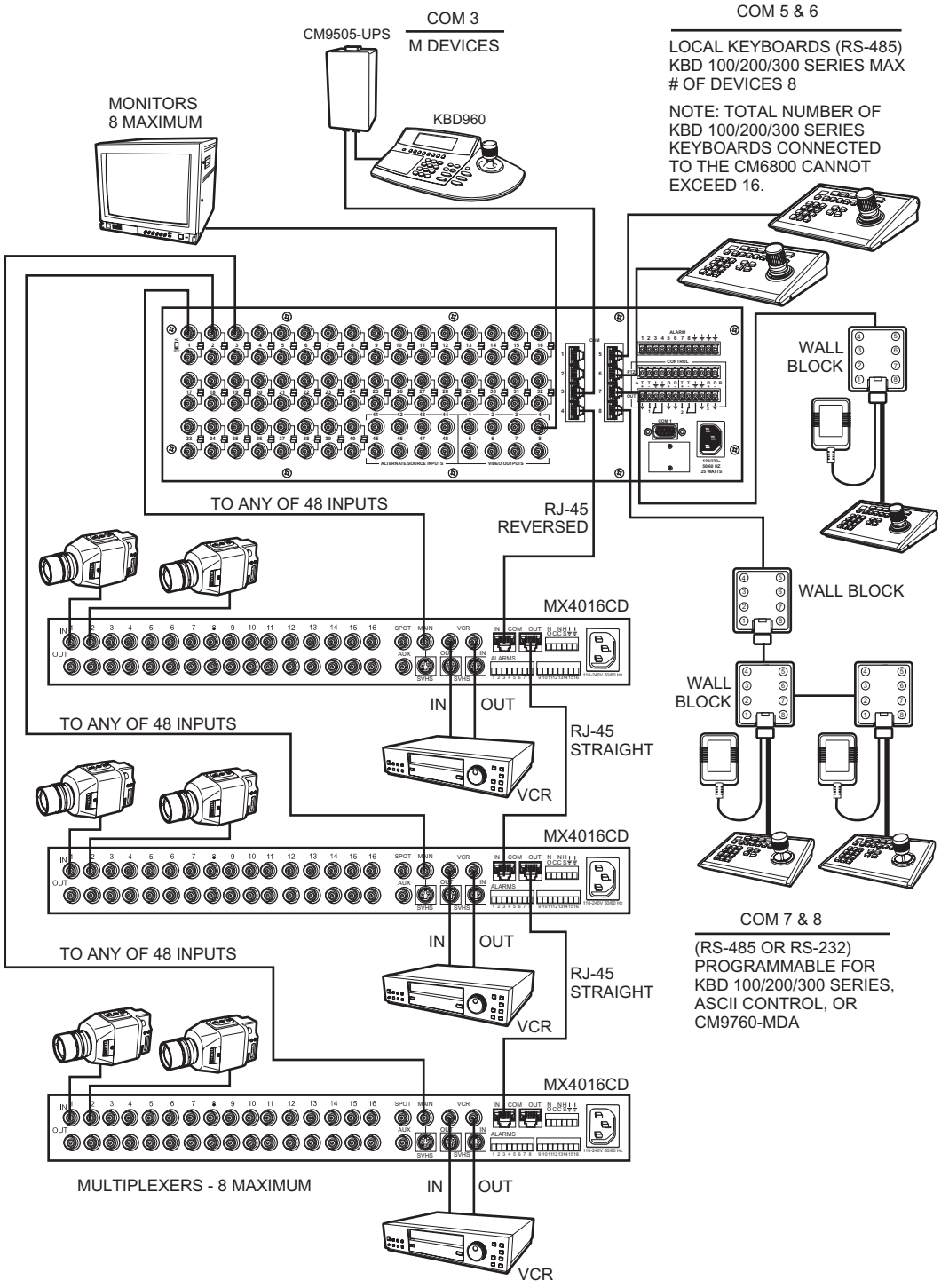


Figure 15. Daisy-Chaining Multiplexers to the CM6800

NOTE: *To daisy-chain multiplexers, use the 6-foot (1.8 m) data cables supplied with each multiplexer. Connect a cable from the first multiplexer's COM OUT port to the second multiplexer's COM IN port. Connect from COM OUT to COM IN until you have daisy-chained eight units, if desired.*

This installation is more effective than using the MX4000SVR server. Using the CM6800 provides the following:

- Support of up to eight monitors instead of four
- Support of M devices, such as the KBD960 keyboard
- Maximum of 18 keyboards instead of four
- Support of additional cameras that are not going through the Genex

Also, the CM6800 macros include multiplexer control allowing you to build sequences that include a combination of multi-camera and/or single camera displays.

The installation in Figure 15 is for up to eight monitors and eight multiplexers connected to a CM6800-48X8.

1. Connect up to eight monitors to the video outputs on the CM6800.
2. Daisy-chain up to eight multiplexers and connect them to any of the 48 inputs on the CM6800.
3. Connect up to 18 keyboards to COM ports 3, 5-8 on the CM6800.

❾ (OPTIONAL) MULTIPLEXER WITH CM6700 SWITCHER/ CONTROLLER UNIT (DUPLEX MODELS ONLY)

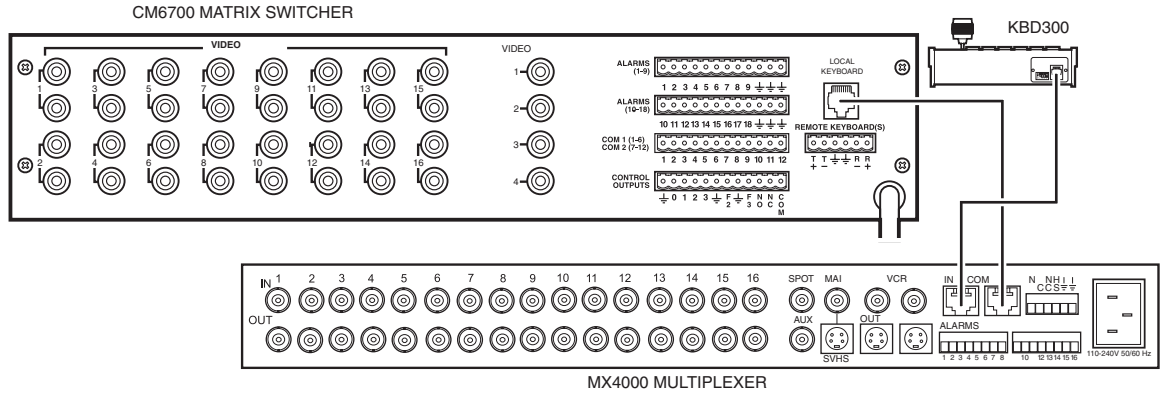


Figure 16. Connecting Duplex Mulitplexer to a CM6700 SCU and Single Keyboard

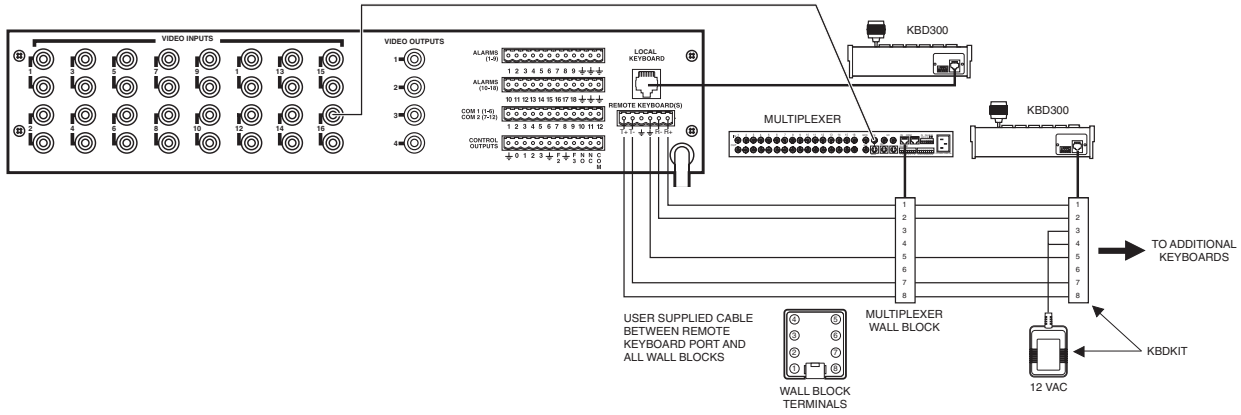


Figure 17. Connecting Duplex Mulitplexer to a CM6700 SCU and Multiple Keyboards

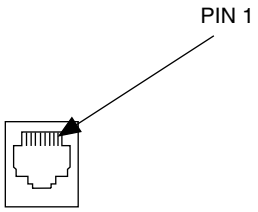


Table B. RJ-45 Pin-Outs

Pin	Multiplexer Function	Keyboards Function
1	RX+	TX+
2	RX-	TX-
3	12 VDC	12 VAC/VDC
4	Open	12 VAC
5	Gnd	Gnd
6	NC	NC
7	TX-	RX-
8	TX+	RX+

NOTE: *A KBD4000/ KBD4002 keyboard cannot be used when a multiplexer is used with a CM6700 SCU.*

Refer to Figure 4 in the *Applications* section for an overview of a typical application. Refer to Table B for RJ-45 pin-outs.

Single Keyboard Hookup

This configuration lets you use a single keyboard—without using a wall block—to control both the switcher and multiplexer (using the keyboard SHIFT key to toggle between them).

Refer to Figure 16 for wiring the multiplexer using a single keyboard. (Remember to set COMM TYPE on the multiplexer to SLAVE and **not** MASTER.)

1. Connect the MAIN monitor output from the multiplexer to VIDEO INPUT 16 on the rear of the CM6700 Switcher/Controller Unit (SCU).

2. Connect the KBD300 keyboard to the multiplexer's COM IN port.

3. Connect the multiplexer's COM OUT port to the CM6700's LOCAL KEYBOARD port.

Multiple Keyboards Hookup

Refer to Figure 17 for wiring the multiplexer using multiple keyboards.

1. Connect the MAIN monitor output from the multiplexer to VIDEO INPUT 16 on the rear of the CM6700 Switcher/Controller Unit (SCU).

2. Connect the multiplexer to the CM6700 keyboard.

⑩ POWERING THE MULTIPLEXER

NOTE: *If the reach between the electrical outlet and the VIEW button is too far, try the following. Detach the power cord from the rear of the multiplexer, plug into the outlet first, and then plug the power cord into the multiplexer. A rack-mounted unit may require two people.*

Use the following procedure to initialize multiplexers being powered up for the first time or after extended storage. This clears any random data remaining in the multiplexer and initializes the memory for user programming.

1. Turn on power to cameras, monitors, and any equipment connected to the multiplexer.
2. Plug the power cord into the multiplexer.
3. Hold down the VIEW button on the multiplexer's front panel while plugging the power cord into an electrical outlet. Release the button when the Initialization menu appears. The monitor displays PLEASE WAIT and begins a 20-second countdown. After the countdown finishes, this menu disappears, all programming menus are at their default settings, and the multiplexer is ready to use.

⑪ MINIMUM PROGRAMMING

IMPORTANT: *If you need to change the language, do so before programming, because changing the language involves resetting the multiplexer to factory defaults. Refer to* Changing the Language *in the* Programming *section.*

As a minimum, you must program the following to operate your system:

- Video Termination

  Set terminations for all video inputs (global setting) in the System Setup menu.

  Set terminations for individual cameras in the Camera menu.

- Coaxitron Format (Camera Protocol)

  Set in the Camera menu.

- Unit ID and Communication Type

  Set in the Advanced System Setup menu.

  Refer to the *Programming* section to program the multiplexer from the front panel. Refer to your keyboard manual to program the multiplexer with the keyboard, or refer to the *Specific Applications Programming* section in this manual.

PROGRAMMING

IMPORTANT: *If you need to change the language, do so before programming because changing the language involves resetting the multiplexer to factory defaults. Refer to the* Changing The Language *section.*

NOTE: *Whenever a multiplexer server is installed, you* ***must*** *enter programming mode from the multiplexer's front panel. After doing so, you can program the multiplexer through its front panel or you can navigate and make programming selections through the keyboard.*

Programming of system, camera, and VCR setup; camera sequencing; and alarm and activity detection are done through on-screen menus displayed on the main monitor. You can enable a password to prevent unauthorized access to the menus.

You can directly program the picture-in-picture, and 4-, 9-, and 16-camera displays without going through menus.

There are two ways to program the multiplexer:

- From the multiplexer front panel. This section provides detailed information.
- From the KBD4000/KBD4002 keyboard. Follow the instructions in your keyboard manual, or refer to the *Specific Applications Programming* section in this manual.

Figure 18 shows which buttons access which menus.

MULTIPLEXER PROGRAMMING TIP: *Enter a menu by holding the appropriate button for three seconds. Exit the menu by holding the same button for three seconds. Use the arrow buttons to move between and highlight menu items; and the +/- button to select menu items, cycle through multiple options, or exit programming mode.*

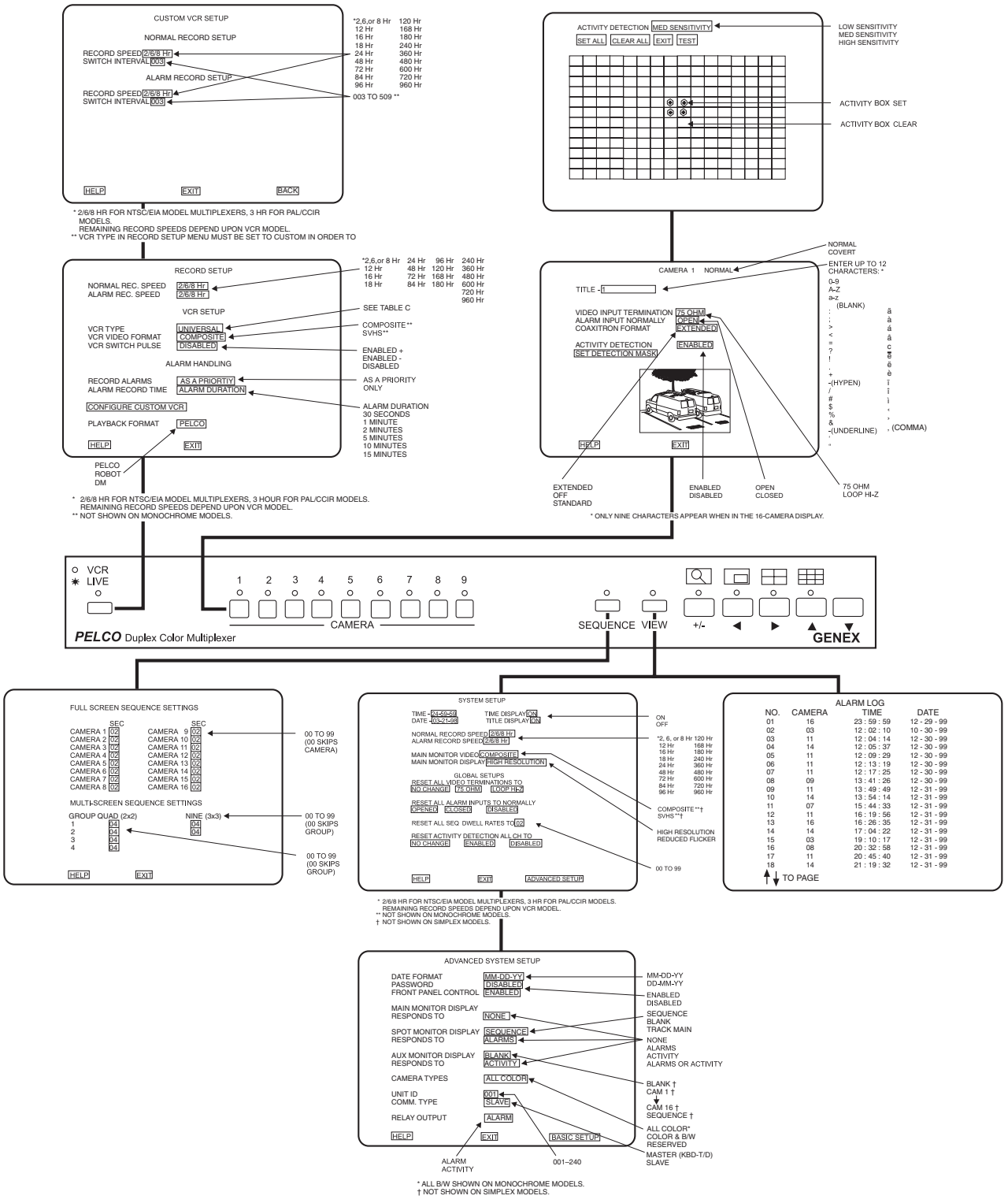

CUSTOM VCR SETUP
NORMAL RECORD SETUP
RECORD SPEED 2/6/8 Hr
SWITCH INTERVAL 003
ALARM RECORD SETUP
RECORD SPEED 2/6/8 Hr
SWITCH INTERVAL 003
*2,6,or 8 Hr 120 Hr
12 Hr 168 Hr
16 Hr 180 Hr
18 Hr 240 Hr
24 Hr 360 Hr
48 Hr 480 Hr
72 Hr 600 Hr
84 Hr 720 Hr
96 Hr 960 Hr
003 TO 509 **
HELP EXIT BACK
* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HR FOR PAL/CCIR MODELS.
REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.
** VCR TYPE IN RECORD SETUP MENU MUST BE SET TO CUSTOM IN ORDER TO
ACTIVITY DETECTION MED SENSITIVITY
SET ALL CLEAR ALL EXIT TEST
LOW SENSITIVITY
MED SENSITIVITY
HIGH SENSITIVITY
ACTIVITY BOX SET
ACTIVITY BOX CLEAR
RECORD SETUP
NORMAL REC. SPEED 2/6/8 Hr
ALARM REC. SPEED 2/6/8 Hr
VCR SETUP
VCR TYPE UNIVERSAL
VCR VIDEO FORMAT COMPOSITE
VCR SWITCH PULSE DISABLED
ALARM HANDLING
RECORD ALARMS AS A PRIORITY
ALARM RECORD TIME ALARM DURATION
CONFIGURE CUSTOM VCR
PLAYBACK FORMAT PELCO
HELP EXIT
PELCO
ROBOT
DM
*2,6,or 8 Hr 24 Hr 96 Hr 240 Hr
12 Hr 48 Hr 120 Hr 360 Hr
16 Hr 72 Hr 168 Hr 480 Hr
18 Hr 84 Hr 180 Hr 600 Hr
720 Hr
960 Hr
SEE TABLE C
COMPOSITE**
SVHS**
ENABLED +
ENABLED -
DISABLED
AS A PRIORITY ONLY
ALARM DURATION
30 SECONDS
1 MINUTE
2 MINUTES
5 MINUTES
10 MINUTES
15 MINUTES
* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HOUR FOR PAL/CCIR MODELS.
REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.
** NOT SHOWN ON MONOCHROME MODELS.
CAMERA 1 NORMAL
TITLE - 1
VIDEO INPUT TERMINATION 75 OHM
ALARM INPUT NORMALLY OPEN
COAXITRON FORMAT EXTENDED
ACTIVITY DETECTION ENABLED
SET DETECTION MASK
HELP EXIT
NORMAL
COVERT
ENTER UP TO 12 CHARACTERS: *
0-9
A-Z
a-z
(BLANK)
-(HYPEN)
-(UNDERLINE)
(COMMA)
EXTENDED
OFF
STANDARD
ENABLED
DISABLED
OPEN
CLOSED
75 OHM
LOOP HI-Z
* ONLY NINE CHARACTERS APPEAR WHEN IN THE 16-CAMERA DISPLAY.
VCR
LIVE
1 2 3 4 5 6 7 8 9
CAMERA
SEQUENCE VIEW +/-
PELCO Duplex Color Multiplexer
GENEX
FULL SCREEN SEQUENCE SETTINGS
SEC SEC
CAMERA 1 02 CAMERA 9 02
CAMERA 2 02 CAMERA 10 02
CAMERA 3 02 CAMERA 11 02
CAMERA 4 02 CAMERA 12 02
CAMERA 5 02 CAMERA 13 02
CAMERA 6 02 CAMERA 14 02
CAMERA 7 02 CAMERA 15 02
CAMERA 8 02 CAMERA 16 02
00 TO 99
(00 SKIPS CAMERA)
MULTI-SCREEN SEQUENCE SETTINGS
GROUP QUAD (2x2) NINE (3x3)
1 04 04
2 04 04
3 04
4 04
00 TO 99
(00 SKIPS GROUP)
00 TO 99
(00 SKIPS GROUP)
HELP EXIT
SYSTEM SETUP
TIME - 24-00-00 TIME DISPLAY ON
DATE - 03-21-98 TITLE DISPLAY ON
ON
OFF
NORMAL RECORD SPEED 2/6/8 Hr
ALARM RECORD SPEED
*2, 6, or 8 Hr 120 Hr
12 Hr 168 Hr
16 Hr 180 Hr
18 Hr 240 Hr
24 Hr 360 Hr
48 Hr 480 Hr
72 Hr 600 Hr
84 Hr 720 Hr
96 Hr 960 Hr
MAIN MONITOR VIDEO COMPOSITE
MAIN MONITOR DISPLAY HIGH RESOLUTION
GLOBAL SETUPS
RESET ALL VIDEO TERMINATIONS TO
NO CHANGE 75 OHM LOOP HI-Z
RESET ALL ALARM INPUTS TO NORMALLY
OPENED CLOSED DISABLED
RESET ALL SEQ. DWELL RATES TO 02
RESET ACTIVITY DETECTION ALL CH TO
NO CHANGE ENABLED DISABLED
COMPOSITE **†
SVHS **†
HIGH RESOLUTION
REDUCED FLICKER
00 TO 99
HELP EXIT ADVANCED SETUP
ALARM LOG
NO. CAMERA TIME DATE
01 16 23 : 59 : 59 12 - 29 - 99
02 03 12 : 02 : 10 10 - 30 - 99
03 11 12 : 04 : 14 12 - 30 - 99
04 14 12 : 05 : 37 12 - 30 - 99
05 11 12 : 09 : 29 12 - 30 - 99
06 11 12 : 13 : 19 12 - 30 - 99
07 11 12 : 17 : 25 12 - 30 - 99
08 09 13 : 41 : 26 12 - 30 - 99
09 11 13 : 49 : 49 12 - 31 - 99
10 14 13 : 54 : 14 12 - 31 - 99
11 07 15 : 44 : 33 12 - 31 - 99
12 11 16 : 19 : 56 12 - 31 - 99
13 16 16 : 26 : 35 12 - 31 - 99
14 14 17 : 04 : 22 12 - 31 - 99
15 03 19 : 10 : 17 12 - 31 - 99
16 08 20 : 32 : 58 12 - 31 - 99
17 11 20 : 45 : 40 12 - 31 - 99
18 14 21 : 19 : 32 12 - 31 - 99
TO PAGE
* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HR FOR PAL/CCIR MODELS.
REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.
** NOT SHOWN ON MONOCHROME MODELS.
† NOT SHOWN ON SIMPLEX MODELS.
ADVANCED SYSTEM SETUP
DATE FORMAT MM-DD-YY
PASSWORD DISABLED
FRONT PANEL CONTROL ENABLED
MM-DD-YY
DD-MM-YY
ENABLED
DISABLED
MAIN MONITOR DISPLAY RESPONDS TO NONE
SPOT MONITOR DISPLAY RESPONDS TO SEQUENCE ALARMS
AUX MONITOR DISPLAY RESPONDS TO BLANK ACTIVITY
SEQUENCE
BLANK
TRACK MAIN
NONE
ALARMS
ACTIVITY
ALARMS OR ACTIVITY
CAMERA TYPES ALL COLOR
UNIT ID 001
COMM. TYPE SLAVE
RELAY OUTPUT ALARM
BLANK †
CAM 1 †
CAM 16 †
SEQUENCE †
ALL COLOR*
COLOR & B/W
RESERVED
MASTER (KBD-T/D)
SLAVE
HELP EXIT BASIC SETUP
ALARM
ACTIVITY
001–240
* ALL B/W SHOWN ON MONOCHROME MODELS.
† NOT SHOWN ON SIMPLEX MODELS.

Figure 18. Menu Access Buttons

PASSWORD

You can program the multiplexer to request a password to access programming menus. Enable the password in the Advanced System Setup menu (refer to the *Advanced System Setup [View Button]* section).

The universal password is 3916 and cannot be changed. You must enter this password by pressing the camera number keys whenever a password is requested.

CHANGING THE LANGUAGE

You can work in any of four languages: English (default), French, German, or Spanish. To change:

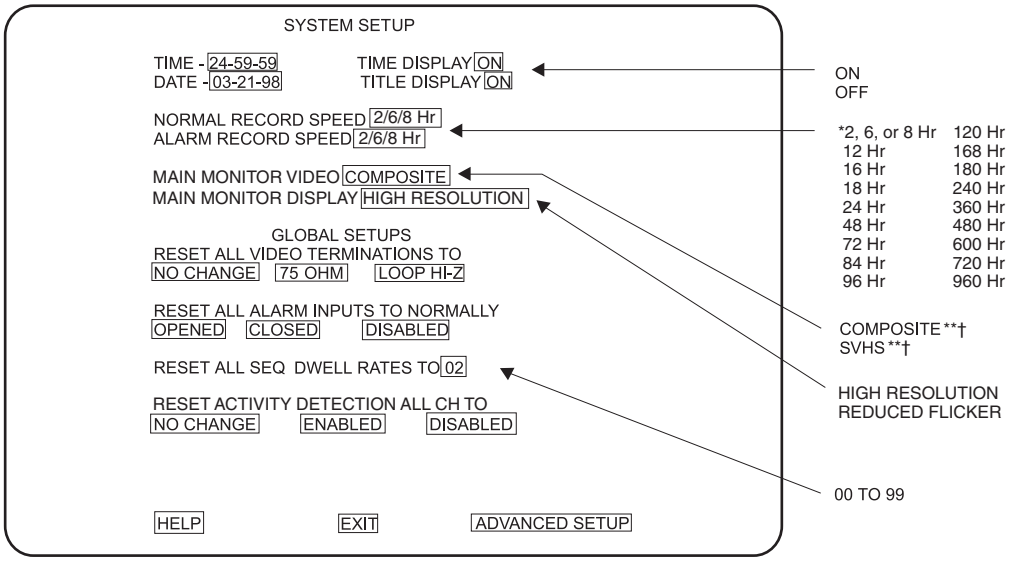
1. If the multiplexer is plugged in, unplug it.
2. Reset the multiplexer to factory defaults by holding down the VIEW button while plugging in the multiplexer. Continue holding down the button until the Initialization menu appears.

   Any programming you have already done **will be lost**.

   Also, any time you do a reset, the unit defaults to English.
3. A timer at the bottom of the screen begins a countdown. You must select the language you want before the timer runs out (step 4).
4. Use the number buttons on the front of the multiplexer to highlight the software version (language) you want: button number 1 = English, 2 = French, 3 = German, 4 = Spanish.
5. Let the timer run out. The language you chose is now active, as are the factory defaults.
6. Program the multiplexer as desired.

MENUS

SYSTEM SETUP (VIEW BUTTON)



* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HR FOR PAL/CCIR MODELS.
REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.
** NOT SHOWN ON MONOCHROME MODELS.
† NOT SHOWN ON SIMPLEX MODELS.

Figure 19. Basic System Setup Menu

To program the main system parameters:

1. Press the VIEW button for approximately three seconds until the System Setup menu appears. Type the password, if requested. The currently selected menu item blinks.

2. Use the arrow buttons to move between items on the screen.

3. Do one of the following when the menu item you desire is highlighted (blinking):

   - If a menu item has more than one option, press the +/- button to cycle through the options to select the one you want.

   - If a menu item has only one option, press the +/- button to select it.

   Note that just parking on the option does not change it; you must also press the +/- button.

TIP: *In any menu you can reverse the direction in which the options cycle by double-pressing the +/- button.*

TIP: *You can exit a menu by pressing (for about three seconds) the same button you used to enter the menu.*

Time and Date
Set the current time and date. The time uses a 24-hour clock.

Time Display
ON - Displays the time and date on the main monitor.
OFF - Time and date are not shown on the main monitor.

Title Display
ON - For duplex models, displays camera titles and the word LIVE or VCR on the monitors. For simplex models, displays camera titles on the main monitor.

OFF - Camera titles are not shown on the monitors. For duplex models, the word LIVE or VCR is shown on the main monitor.

NOTE: *Title Display shows a maximum of 12 characters in all modes except 16-camera display, in which only 9 characters are shown.*

Record Speeds
Sets the VCR's normal and alarm recording speeds. Setting the speeds in the System Setup menu also sets the speeds in the Record Setup and Custom VCR Setup menus.

Main Monitor Video (Color Duplex Models Only)
Composite is standard video on coaxial cable. SVHS is higher resolution video on a special cable.

Main Monitor Display
The options are High Resolution or Reduced Flicker. Select Reduced Flicker when the monitor screen flickers, such as from a neon light. Flickering is more pronounced in PAL format multiplexers.

GLOBAL SETUPS

Video Terminations
These settings set the terminations for all video inputs. To set individual inputs, refer to the *Camera Setup* section.

Set to 75 OHM when equipment is connected only to the video IN connectors.

Set to LOOP HI-Z when equipment is connected to both the video IN and video OUT (looping) connectors of all channels being used. Equipment connected to the looping connectors must be terminated at 75 ohms.

NO CHANGE - This is a pass-through selection in case you unintentionally hit the +/- button. This is not an undo button.

Alarm Inputs
Program alarm inputs for normally open or normally closed operation.

Normally Open = current flow = alarm switch or relay closed
Normally Closed = no current flow = alarm switch or relay open

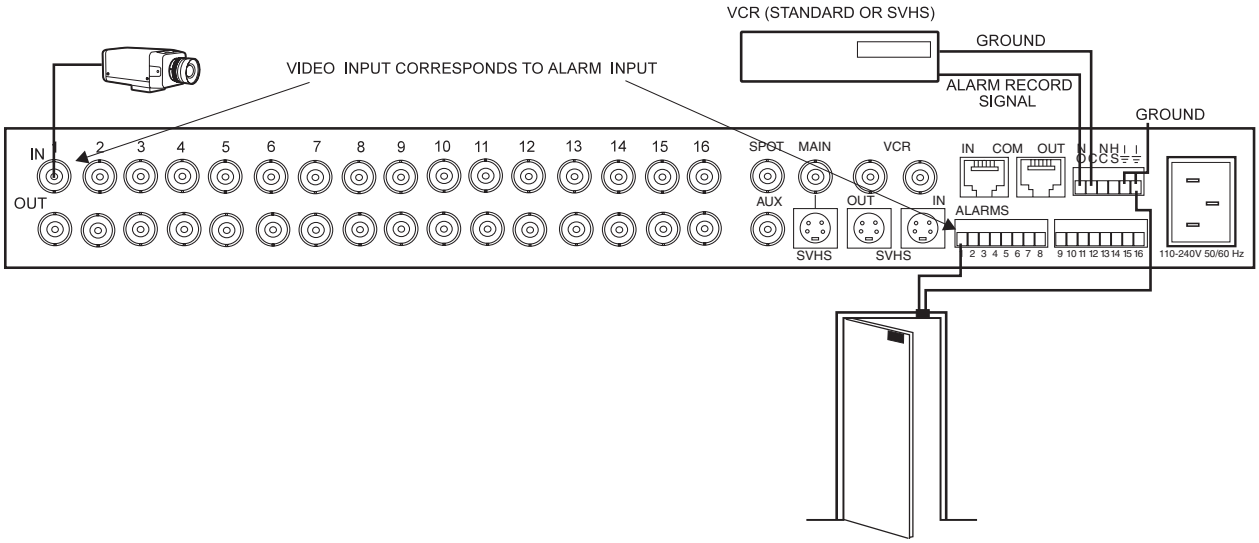

VCR (STANDARD OR SVHS)
GROUND
VIDEO INPUT CORRESPONDS TO ALARM INPUT
ALARM RECORD SIGNAL
GROUND
IN
OUT
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
SPOT MAIN VCR
AUX OUT IN
SVHS SVHS
IN COM OUT
ALARMS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
110-240V 50/60 Hz

Figure 20. Alarm Wiring Example

In the example in Figure 20, current flows through the contacts (switch) in the door when it is closed. When the door is open, no current flows. To cause an alarm when the door is opened, program the alarm input for normally closed (door is normally closed). To cause an alarm when the door is closed, program the alarm input for normally open (door is normally open).

- To globally set alarm inputs, select OPENED, CLOSED, or DISABLED.
- To individually set alarm inputs, refer to the *Camera Setup* section.
- To determine how alarms are recorded and for how long, refer to the *Record Setup* section.

Dwell Rates
Sets the sequence dwell rate (how long each camera's view is sent to the multiplexer) in seconds for all cameras. To set individual rates, refer to the *Sequence Setup* section.

Activity Detection
ENABLED/DISABLED - Turns activity detection on or off for all video inputs. To set individual inputs, refer to the *Camera Setup* section.

NO CHANGE - This is a pass-through selection in case you unintentionally hit the +/- button. This is not an undo button.

4. When you finish all the changes you want to make, go to EXIT or ADVANCED SETUP.
5. Press the +/- button to exit programming mode or to go to the Advanced System Setup menu.

When HELP is highlighted, you can press the +/- button to display a help screen that tells you which buttons to press to configure specific options.

ADVANCED SYSTEM SETUP (VIEW BUTTON)

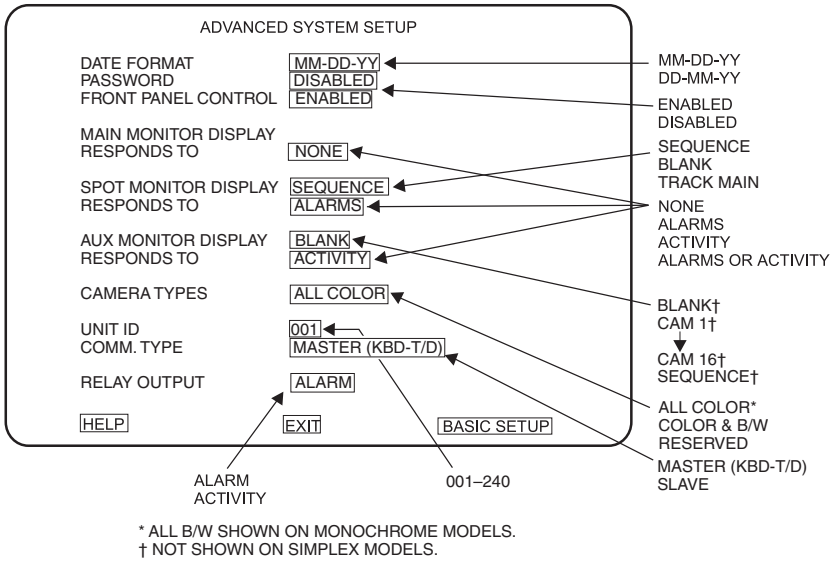


Figure 21. Advanced System Setup Menu

To program the advanced main system parameters:

1. Press the VIEW button for approximately three seconds until the System Setup menu appears. Type the password if requested. The currently selected menu item blinks.

2. Use the arrow buttons to highlight ADVANCED SETUP.

3. Press the +/- button. The Advanced System Setup menu appears.

4. Use the arrow buttons to move between items on the screen.

5. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options.

   Date Format
   Sets the format for displaying the date on the main monitor.

   Password
   Enables or disables password control to access programming menus.

   Front Panel Control
   Enables or disables the front panel buttons to operate the multiplexer. You can access programming menus in either mode.

   Main Monitor Display
   Select ALARMS, ACTIVITY, or ALARMS OR ACTIVITY if you want the main monitor to switch to cameras that have alarms or activity detection. If you are using the main monitor for normal video and you do not want alarms or activity detection to override what you are observing, select NONE.

   Spot Monitor Display
   If you want the spot monitor to switch to cameras that have alarms or activity detection, select BLANK, SEQUENCE or TRACK MAIN, then under RESPONDS TO select ALARMS, ACTIVITY, or ALARMS OR ACTIVITY. If you are using the spot monitor for normal video and you do not want alarms or activity detection to override what you are observing, select NONE.

NOTE: *In alarms mode, an alarm signal is produced when a remote switch opens or closes a ground in the multiplexer; for example, if a switch is on a door and the door is opened (refer to the* Alarms *section). In activity mode, the multiplexer continually monitors selected camera inputs for activity. When activity is detected, the multiplexer increases the frequency with which those cameras are shown and recorded. Activity detection is most effective when only a few cameras are showing activity (refer to the* Camera Setup *section).*

BLANK - Lets you view an individual camera, but you cannot run a sequence. An alarm or activity detection will override the camera you are viewing. When the alarm or activity detection goes away, the screen will return to the camera you were viewing. Press the Sequence button to return to a blank screen.

SEQUENCE - Lets you view an individual camera or run a sequence. An alarm or activity detection will override what you are observing. When the alarm or activity detection goes away, the screen will return to the camera or sequence you were viewing.

TRACK MAIN - The spot monitor will follow the camera switching that occurs on the main monitor. This feature is used when a KBD4000 keyboard is connected to the multiplexer for controlling moveable cameras on the main monitor.

Aux Monitor Display (Duplex Model Only)
Select ALARMS, ACTIVITY, or ALARMS OR ACTIVITY if you want the auxiliary monitor to show cameras with alarms or activity detection. If you are using the auxiliary monitor to sequence all cameras and you do not want alarms or activity detection to override the sequence, select NONE.

BLANK - The screen will remain blank unless there is an alarm or activity detection.

SEQUENCE - The monitor will sequence all cameras unless there is an alarm or activity detection.

CAM 1 through CAM 16 - The monitor will display the selected camera unless there is an alarm or activity detection.

Camera Types
The COLOR & B/W setting lets the multiplexer adapt to the combination of both color and monochrome video signals. The multiplexer's switching speed is slower when it must change formats between monochrome and color cameras.

- For duplex monochrome models, you will not receive color from a color camera except on the spot and auxiliary monitor displays.
- For simplex monochrome models, you will not receive color from a color camera except in RECORD mode.

The RESERVED setting can improve performance when using cameras with non-standard sync or poor video quality.

NOTE: *Do* ***not*** *program the unit ID from the keyboard. It must be programmed from the front panel.*

Unit ID
This is the multiplexer's address. If your system has more than one multiplexer, each multiplexer must have its own address. (Incorrect Unit ID and Comm Type entries are common causes of playback and P/T control problems.) Refer to Figure 22.

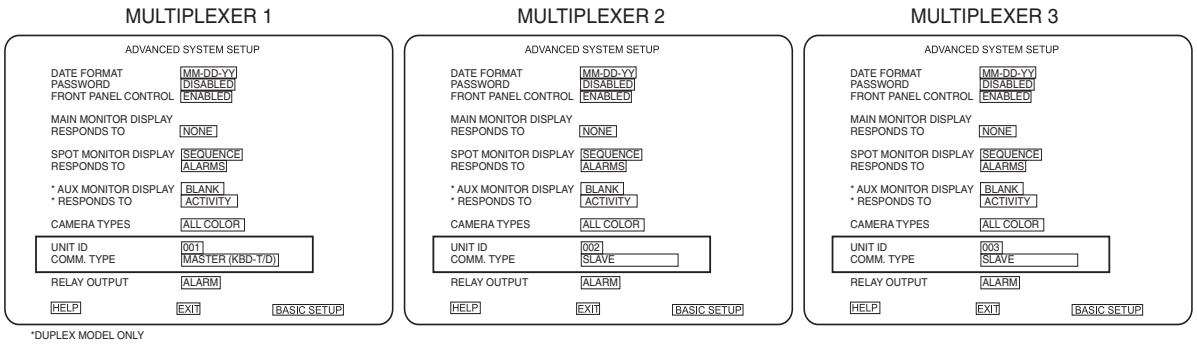


Figure 22. Multiplexer Menus for Multiple Units in One System

NOTE: *Remember, one multiplexer must be the master. If your system uses multiple multiplexers, one must be programmed as master and the others as slaves.*

Comm. Type

- If you have a stand-alone multiplexer, it must be the master.
- If you have a KBD4000/KBD4002 keyboard in polled communication mode (keyboard switch 4 OFF): This is the normal mode of communication. If you have one multiplexer connected to a keyboard, the multiplexer must be set for master. If you have more than one multiplexer connected to a keyboard, one multiplexer must be the master and all others slaves. The keyboard must be connected to the master multiplexer. Refer to Figure 22.
- If you have a KBD4000/KBD4002 keyboard in non-polled mode (keyboard switch 4 ON): All multiplexers are slaves and the keyboard is the master. Refer to your keyboard manual for more information about polled and non-polled modes.
- If you have an MX4000SVR server: If you have one multiplexer connected to a server, it must be set for master. If you have more than one multiplexer connected to a server, one multiplexer must be the master and all others slaves. The server must be connected to the master multiplexer. Refer to Figure 22.

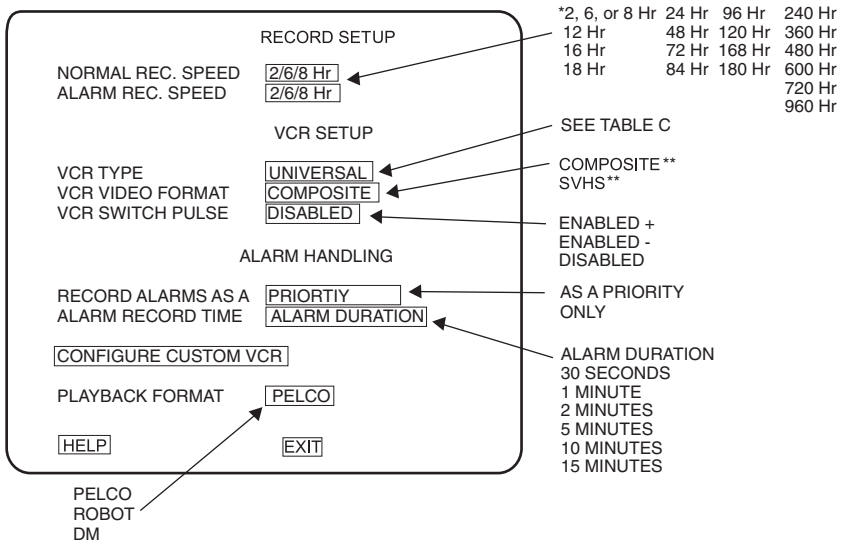
Relay Output

Operates the relay on the back of the multiplexer. The relay is used to change the VCR to its alarm recording speed (refer to step 5, *Alarms*, in the *Installation* section).

6. When you finish all the changes you want to make, go to EXIT or BASIC SETUP.
7. Press the +/- button to exit programming mode or to go to the basic System Setup menu.

When HELP is highlighted, you can press the +/- button to display a help screen that tells you which buttons to press to configure specific options.

RECORD SETUP (LIVE/VCR OR DISPLAY/RECORD BUTTON)



* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HOUR FOR PAL/CCIR MODELS. REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.
** NOT SHOWN ON MONOCHROME MODELS.

Figure 23. Basic Record Setup Menu

To program the VCR recording parameters:

1. Press the LIVE/VCR (duplex) or DISPLAY/RECORD (simplex) button for approximately three seconds until the Record Setup menu appears. Type the password, if requested. The currently selected menu item blinks.

2. Use the arrow buttons to move between items on the screen.

3. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options to select the one you want.

   Record Speeds
   Sets the VCR's normal and alarm recording speeds. Setting speeds in the Record Setup menu also sets speeds in the System Setup and Custom VCR Setup menus.

   VCR Type
   See Table C. If your VCR is not listed among the options, do either of the following:

   - Select UNIVERSAL. In the recording speed menu item at the top of the screen, select an option your VCR will support.

   - Select CUSTOM. Then go to CONFIGURE CUSTOM VCR and press the +/- button to access the Custom VCR Setup menu. The switch interval can be changed only while in this setting.

   VCR Video Format
   Composite is standard video on a coaxial cable. SVHS is higher resolution video on a special cable. This feature is not available on monochrome units.

   VCR Switch Pulse
   ENABLED + means the multiplexer waits for a **positive** head switching pulse from the VCR. If the multiplexer does not get a pulse from the VCR (because of a broken wire or the VCR does not give a pulse in some modes), it may appear the multiplexer is not working properly.

   ENABLED – (minus sign) means the multiplexer waits for a **negative** head switching pulse from the VCR.

DISABLED means the VCR head switching pulse is not used.

(Incorrect VCR Switch Pulse entry is a common cause of playback and P/T control problems.)

Alarm Handling
Determines how alarms are recorded and for how long.

AS A PRIORITY updates and records cameras with an alarm more often than cameras without an alarm.

ONLY records only cameras with an alarm.

Configure Custom VCR
Press the +/- button to get to the Custom VCR Setup menu.

Playback Format
Tapes made using Pelco—and most Robot and DM—multiplexers can be played.

4. When you finish all the changes you want to make, go to EXIT.

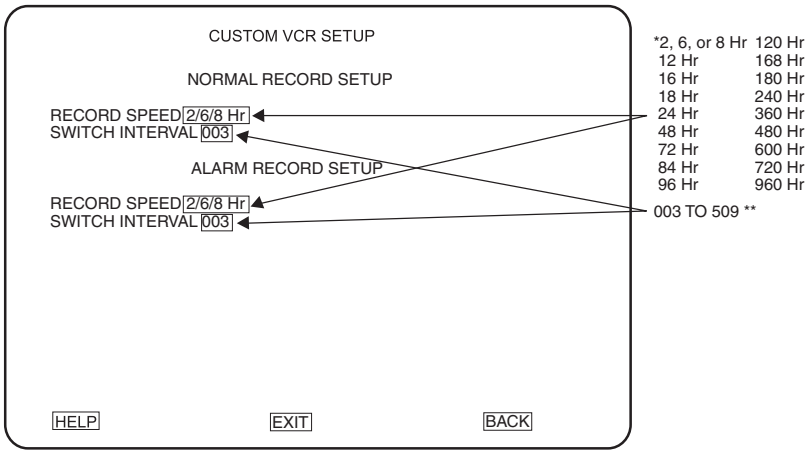
5. Press the +/- button to exit programming mode.

When HELP is highlighted, you can press the +/- button to display a help screen that tells you which buttons to press to configure specific options.

Table C. VCR Models

NTSC	PAL
UNIVERSAL	UNIVERSAL
GYYR TLC1800	ASUTSA TLVCR 251
GYYR 2100	ASUTSA TLVCR 964
GYYR 2100 HD MODE	BURLE TC3910X
JVC SR-L900U	HITACHI VTL30E
JVC SR-L901U	HITACHI VT-L1000E
JVC SR-9070U	HITACHI VT-L2000E
JVC BR-S920/925	JVC BR9060E
MITSUBISHI HS7424U	JVC BR-S920/925
MITSUBISHI HS7496U	JVC SR-L900E
MITSUBISHI HS5168U	MITS. HS5300/5600
MITS. HS7168U NORM	MITS. HS5424E
MITS. HS7168U HD	PANAS. AG6024/6124
PANASONIC AG-RT600	PANASONIC AG6720
PANASONIC AG6124	PANASONIC AG6730
PANASONIC AG6730	PANASONIC AG6040
PELCO TLR2024	SANYO TLS900P
PELCO TLR2096	SANYO TLS1000
PELCO TLR2168 NORM	SANYO SRT-500P
PELCO TLR2168 HD	SANYO TLS2000
SANYO SRT600	SONY SVT100P
SANYO TLS924/972	SONY SVT5000P
SANYO TLS2500/7000	CUSTOM
TOSHIBA KV6300	
TOSHIBA KV7024A	
TOSHIBA KV7168A	
TOSHIBA KV7960A	
TOSHIBA KV8168A	
CUSTOM	

CUSTOM VCR SETUP (LIVE/VCR OR DISPLAY/RECORD BUTTON)



* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HR FOR PAL/CCIR MODELS. REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.

** VCR TYPE IN RECORD SETUP MENU MUST BE SET TO CUSTOM IN ORDER TO MAKE SELECTIONS.

Figure 24. Custom VCR Setup Menu

To program advanced VCR parameters:

1. Press the LIVE/VCR (duplex) or DISPLAY/RECORD (simplex) button for approximately three seconds until the Record Setup menu appears. Type the password if requested. The currently selected menu item blinks.

2. Make sure VCR Type in the Record Setup menu is set to CUSTOM.

3. Use the arrow buttons to highlight CONFIGURE CUSTOM VCR.

4. Press the +/- button. The Custom VCR Setup menu appears.

5. Use the arrow buttons to move between items on the screen.

6. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options.

   Record Speeds
   Sets VCR's normal and alarm recording speeds.

   Setting speeds in the Custom VCR Setup menu also sets speeds in the System Setup and Record Setup menus.

   Interval
   Interval is the number of fields recorded by the VCR before switching to the next camera.

7. When you finish all the changes you want to make, go to EXIT or BACK.

8. Press the +/- button to exit programming mode or to return to the Record Setup menu.

When HELP is highlighted, you can press the +/- button to display a help screen that tells you which buttons to press to configure specific options.

CAMERA SETUP (CAMERA BUTTONS)

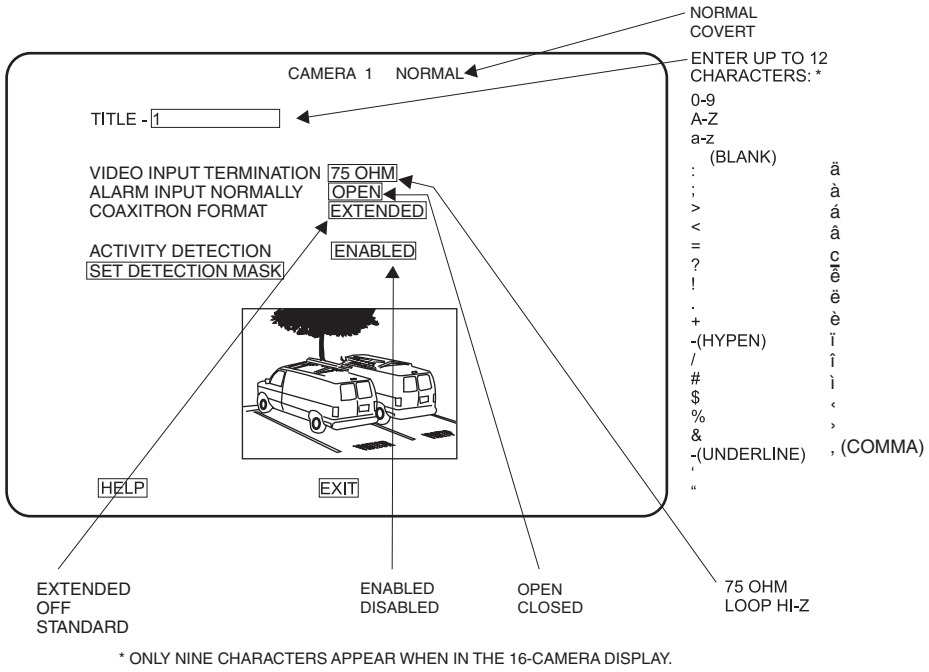


Figure 25. Basic Camera Menu

To program a camera input:

1. Press the desired CAMERA button for approximately three seconds until the Camera menu appears. Type the password, if requested. The currently selected menu item blinks.

   A video insert appears that shows what the camera is viewing. This helps ensure you have selected the correct camera and lets you see how video is affected when you select a menu option.

2. Use the arrow buttons to move between items on the screen.

3. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options to select the one you want. Use the right arrow button to advance to the next character position when titling a camera.

   Normal/Covert Mode
   NORMAL – Use when you want the camera view to appear on the monitor. This is the default.

   COVERT – Use when you want to record a camera view but do not want the picture to appear on the monitor. The monitor will show only the camera number on a black background; however, the videotape will record what the camera sees. (You might use this if you do not want the operator or visitors to see the picture but want it recorded.) You can set each camera individually.

   (If you play back the tape on the same equipment, any covert picture will still appear blanked. Change the setting to NORMAL to see the picture.)

Video Termination
Set to 75 OHM when equipment is connected only to the video IN connector.

Set to LOOP HI-Z when equipment is connected to both the video IN and video OUT (looping) connectors. Equipment connected to the looping connector must be terminated at 75 ohms.

Alarm Input
Refer to the *System Setup* section for an explanation of normally closed and normally open operation.

Coaxitron Format
EXTENDED - Use when your system has moveable cameras controlled by 32-bit Coaxitron receivers, such as Esprit™, Intercept, Spectra, IRD/ERD2000 Series, and LRD41C21/LRD41C22 Series.

OFF - Use when your system has fixed cameras only.

STANDARD - Use when your system has moveable cameras controlled by 15-bit Coaxitron receivers, such as the CX9000 Series, the PT7700, and the ED25/27/28/29.

Activity Detection
A camera can be set to respond or not respond to activity. If enabled, select SET DETECTION MASK to define what part of the camera's viewing field will be monitored for activity.

4. To program another camera, press the button for that camera. Repeat steps 2-3.

5. When you finish all the changes you want to make, go to EXIT.

6. Press the +/- button to exit programming mode.

When HELP is highlighted, you can press the +/- button to display a help screen that tells you which buttons to press to configure specific options.

ACTIVITY MASK SETUP

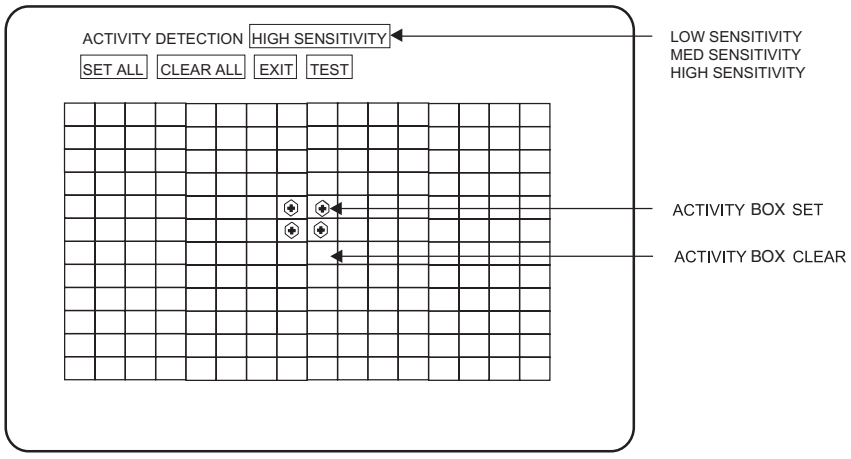


Figure 26. Activity Detection Mask

Activity detection continually monitors selected camera inputs for activity. When activity is detected, the multiplexer increases the frequency with which those cameras are shown and recorded. Activity detection is most effective when only a few cameras are showing activity. As the number of cameras with activity increases, the slower the frequency at which they can be shown and recorded. If all 16 cameras show activity, there will be virtually no increase.

The activity mask selects what portion of the camera's field of view the multiplexer monitors for activity. The entire grid is active on default.

To program an activity mask for a camera:

1. Press the desired CAMERA button for approximately three seconds until the Camera menu appears. Type the password if requested. The currently selected menu item blinks.

2. Use the arrow buttons to highlight SET DETECTION MASK.

3. Press the +/- button. The Activity Mask appears. The currently selected menu item or activity box blinks.

4. Use the arrow buttons to move between menu items and activity boxes on the screen.

5. Highlight the sensitivity menu item. Press the +/- button to select the sensitivity. The higher the sensitivity, the less motion needed to detect activity.

6. Turn activity boxes on or off.

   To turn on all activity boxes, use the arrow buttons to choose SET ALL. Press the +/- button. All boxes will contain a symbol as shown in Figure 26. The multiplexer will monitor motion in those boxes.

   To turn off all activity boxes, use the arrow keys to choose CLEAR ALL. Press the +/- button. All boxes will be blank.

   To turn on or off an individual box, use the arrow keys to select the box. Press the +/- button to toggle a box on or off.

   Turn off activity boxes where you want motion ignored (such as blowing trees, highways, computer monitors, fluorescent lighting, and non-problem areas). An example of a non-problem area would be a camera focused on a bank vault entrance but ignoring tellers working nearby.

7. To test activity detection, highlight TEST and press the +/- button.

   Create motion in front of the camera. Small black and white dashes will appear where motion is detected.

   To exit test mode, press the +/- key to return to the mask.

8. If you did not like what you saw in test mode, change the mask and test activity detection again.

9. When you finish defining the activity mask, go to EXIT. Press the +/- button to exit programming mode.

10. If necessary, repeat steps 1-9 to program the activity mask for other cameras.

SEQUENCE SETUP (SEQUENCE BUTTON)

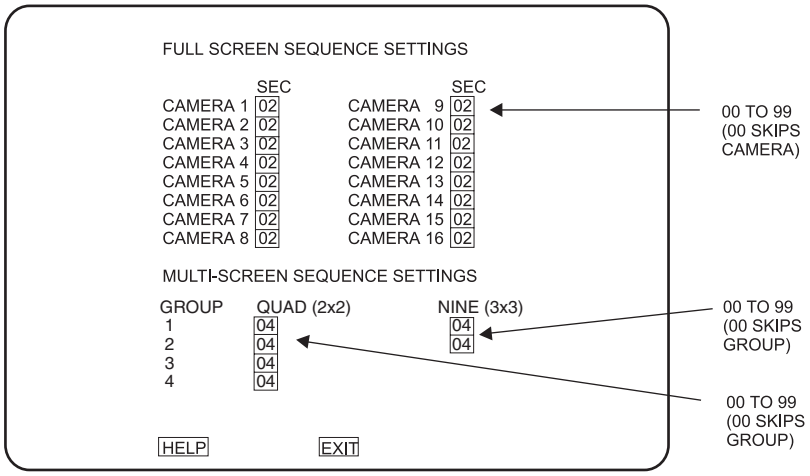


Figure 27. Camera Sequence Menu

Sequencing can be programmed in full screen, four-camera and nine-camera displays. Cameras will not sequence when operating the zoom function. LEDs above the camera buttons will illuminate to indicate which cameras are being displayed.

To program camera sequencing:

1. Press the SEQUENCE button for approximately three seconds until the Sequence menu appears. Type the password, if requested. The currently selected menu item blinks.

2. Use the arrow buttons to move between items on the screen.

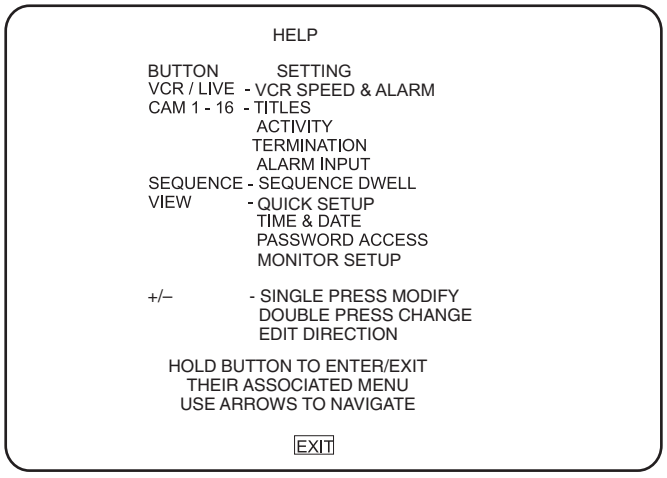
3. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options to select the one you want.

4. When you finish all the changes you want to make, go to EXIT.

5. Press the +/- button to exit programming mode.

When HELP is highlighted, you can press the +/- button to display a help screen that tells you which buttons to press to configure specific options.

HELP MENU



(The simplex menu shows DISP/REC rather than VCR/LIVE.)

Figure 28. Help Menu

The Help menu is accessed from any other menu.

1. Use the up and down arrow buttons in any menu to highlight HELP.
2. Press the +/- button. The Help menu appears.

ALARM LOG

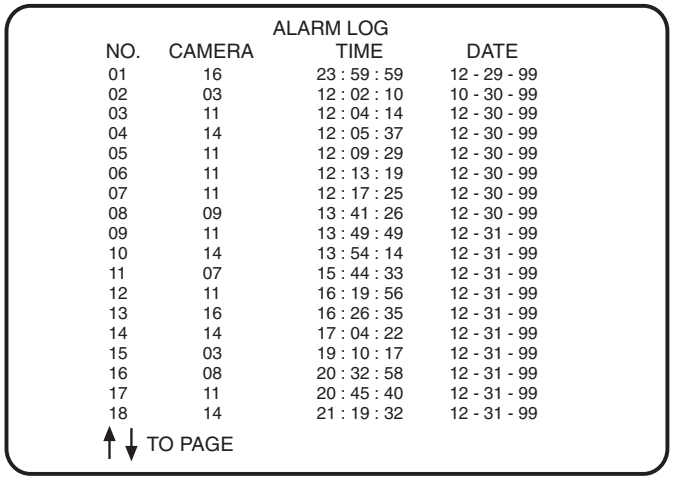


Figure 29. Alarm Log Screen

The alarm log lists the last 72 alarms. Alarm number 1 is the most recent. If there are more than 18 alarms in the log, up/down arrows and the words “TO PAGE” appear at the bottom of the screen.

1. To access the log, double-press the VIEW button on the multiplexer’s front panel (you cannot use the keyboard to access this log). The log appears.

2. If there are more than 18 alarms, use the up/down arrows to move forward and back by sets of 18 (72 total).

3. If you want to clear the log, press VIEW twice while looking at the log.

4. To exit without clearing, press VIEW once.

MULTIPLE CAMERA DISPLAY SETUP

Use the front panel controls to configure multiple camera display formats. LEDs above the camera buttons illuminate to indicate which cameras are being displayed.

PROGRAMMING THE PICTURE-IN-PICTURE DISPLAY (▭ BUTTON)

You can program the on-screen location and size of the picture-in-picture (PIP) display. PIP is not available in VCR playback mode.

To program the PIP display:

1. Press the ▭ button.
2. Press the ▭ button (for approximately three seconds) until the message PROGRAM PIP SIZE appears.
3. Use the arrow buttons to increase or decrease the PIP display size.
4. Press the +/- button. The message PROGRAM PIP POSITION appears.
5. Use the arrow buttons to move the PIP display location.
6. Press the +/- button to exit the PIP programming menu.

PROGRAMMING THE 4-CAMERA DISPLAYS (⊞ BUTTON)

You can program four groups of four cameras each. Each of the four groups can be programmed to include any four cameras. ⊞ is not available in RECORD mode for the simplex models.

To program the four-camera displays:

1. Press the ⊞ button to call up a four-camera display. If necessary, press the ⊞ button again to advance to the four-camera group you wish to configure.
2. Press the ⊞ button for approximately three seconds. A bar will appear in the first camera location of the four-camera display, indicating you are in programming mode.
3. Use the arrow buttons to move to each camera location in the four-camera display.
4. When the camera location you desire is highlighted, choose the new camera by pressing the camera button for the desired camera.
5. To exit programming mode, press any arrow button as many times as necessary until the bar moves off the screen.
6. If necessary, repeat steps 1-5 to program another group.

NOTE: *All active cameras can be sequenced in one location in 4-, 9-, or 16-camera display mode. While in multiple-camera display mode, use the arrow buttons to move the on-screen bar to the camera location for sequencing. Press the SEQUENCE button to initiate sequencing of all active cameras. Refer to the* Operation Guide *table also.*

PROGRAMMING THE 9-CAMERA DISPLAYS (BUTTON)

You can program two groups of nine cameras each (16-channel model only). Both groups can be programmed to include any nine cameras. is not available in RECORD mode for the simplex models.

To program the nine-camera displays:

1. Press the button to call up a nine-camera display. If necessary, press the button again to advance to the other nine-camera group.
2. Press the button for approximately three seconds. A bar will appear in the first camera location of the nine-camera display, indicating you are in programming mode.
3. Use the arrow buttons to move to each camera location in the nine-camera display.
4. When the camera location you desire is highlighted, choose the new camera by pressing the camera button for the desired camera.
5. To exit programming mode, press any arrow button as many times as necessary until the bar moves off the screen.
6. If necessary, repeat steps 1-5 to program the second group.

PROGRAMMING THE 16-CAMERA DISPLAY (BUTTON)

is not available in RECORD mode for the simplex models.

To program the 16-camera display:

1. Press the button to call up the 16-camera display.
2. Press the button for approximately three seconds. A bar will appear in the first camera location of the 16-camera display, indicating you are in programming mode.
3. Use the arrow buttons to move to each camera location in the 16-camera display.
4. When the camera location you desire is highlighted, choose the new camera by pressing the camera button for the desired camera.
5. To exit programming mode, press any arrow button as many times as necessary until the bar moves off the screen.

PROGRAMMING MENU DEFAULTS

Table D. Programming Menu Defaults

Menu	Item	Default
System Setup	Time Display	On
	Title Display	On
	Normal Record Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR)
	Alarm Record Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR)
	Main Monitor Video*	Composite*
	Main Monitor Display	High Resolution
	Reset All Video Terminations To	75 Ohm
	Reset All Alarm Inputs To Normally	Opened
	Reset All Seq Dwell Rates To	02
	Reset Activity Detection All Ch To	Enabled
Advanced System Setup	Date Format	MM-DD-YY (NTSC/EIA) DD-MM-YY (PAL/CCIR)
	Password	Disabled
	System Password	3916
	Front Panel Control	Enabled
	Main Monitor Display Responds To	None
	Spot Monitor Display	Sequence
	Responds To	Alarms
	Aux Monitor Display*	Blank*
	Responds To*	Activity*
	Camera Types	All Color
	Unit ID	001
	Comm. Type	Master (KBD-T/D)
	Relay Output	Alarm
Record Setup	Normal Rec. Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR)
	Alarm Rec. Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR)
	VCR Type	Universal
	VCR Video Format	Composite
	VCR Switch Pulse	Disabled
	Record Alarms	As A Priority
	Alarm Record Time	Alarm Duration
	Playback Format	Pelco
Custom VCR Setup	Normal Record Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR)
	Normal Switch Interval	003
	Alarm Record Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR)
	Alarm Switch Speed	003
Camera	Title	Camera Number
	Normal/Covert Mode	Normal
	Video Input Termination	75 Ohm
	Alarm Input Normally	Open
	Coaxitron Format	Extended
	Activity Detection	Enabled
Activity Detection	Sensitivity	Med
	Activity Boxes	Set All
Sequence	Individual Camera Dwell Time	02
	Quad (2x2) Dwell Time	04
	Nine (3x3) Dwell Time	04

* Applies to the duplex models only.

SPECIFIC APPLICATIONS PROGRAMMING

KBD4000/KBD4002 PROGRAMMING (OPTIONAL)

NOTE: *Whenever a multiplexer server is installed, you* ***must*** *enter programming mode from the multiplexer's front panel. After doing so, you can program the multiplexer through its front panel or you can navigate and make programming selections through the keyboard.*

TIP: *In any menu, you can use the OPEN key to scroll options forward and the CLOSE key to scroll backward. You can use the pan left/right buttons or joystick to navigate multiple options on the same line.*

Before you can use the keyboard to control the multiplexer, you must do the following at the multiplexer front panel:

1. Hold down the VIEW button for approximately three seconds until the System Setup menu appears. Type the password if requested.
2. Highlight ADVANCED SETUP with the arrow buttons. Press +/-. The Advanced System Setup menu appears. Skip step 3 if you have only one multiplexer.
3. Arrow to UNIT ID. Press +/- to select the multiplexer's unit ID.
4. Arrow to COMM TYPE. In polled communication mode (switch 4 off), one multiplexer must be the master and all others slaves. In non-polled mode (switch 4 on), all multiplexers must be slaves.
5. Arrow to EXIT. Press +/-.

You can now use the keyboard to program multiplexers. To do so: access menus with the menu keys, and then use the joystick or pan and tilt keys to move between items on the screen. When your menu item is highlighted (blinking), do one of the following:

- Press OPEN to cycle through options if a menu item has multiple options.
- Press OPEN to select if the menu item has only one option.

(Note that to access a Spectra or Esprit camera's main programming menu with a KBD4000/KBD4002, you need to be viewing the spot monitor; call the camera, enter 95 [28 if in 32-preset mode], and hold the PRESET key until the menu appears.)

PAN AND TILT CONTROL QUICK SETUP

GENEX INSTRUCTIONS

NOTE: *Do* ***not*** *try to change the unit ID from the keyboard.*

1. Hold down the VIEW button on the front of the multiplexer for approximately three seconds until the System Setup menu appears. Type the password if requested.
2. Arrow to ADVANCED SETUP and press the +/- button. The Advanced System Setup menu appears.
3. If you have one monitor on your system, go to SPOT MONITOR DISPLAY and highlight SEQUENCE. Press the +/- button twice to change the field to TRACK MAIN.
4. Arrow to UNIT ID. Press +/- to select the multiplexer's unit ID.
5. Go to COMM TYPE and use the +/- button to toggle between MASTER and SLAVE. One multiplexer must be the master and all others slaves.
6. Press and release the CAMERA number key for the pan and tilt. The Camera menu appears.
7. Arrow to COAXITRON FORMAT. If the P/T is 32-bit (Spectra, Esprit, Intercept, or LRD41C21/LRD41C22 Series), set to Extended Coaxitron. If the receiver is 15-bit, set to Standard Coaxitron.
8. Go to EXIT and press the +/- button.

SPECTRA/ESPRIT MAIN MENU ACCESS

You can call up the Spectra or Esprit main menu by programming preset 95 (28 if in 32-preset mode).

If you are using a KBD4000 Series keyboard: Press the SPOT MONITOR key. Enter 95, and then hold the PRESET key until the main menu appears on the screen.

Refer to either the SD5 Series Spectra II and Spectra Lite Dome Systems or ES3000 Series Esprit Integrated Positioning System installation/operation manuals for full programming and operating instructions.

TESTING

HEAD SWITCHING PULSE

1. Press the LIVE/VCR (duplex) or DISPLAY/RECORD (simplex) button so the LED is OFF (duplex) or ON (simplex).
2. Press the VIEW button so the LED also is ON. With the VCR stopped, you should see a frozen picture for the duplex model. The simplex is blank.
3. Put the VCR into RECORD mode. The picture should begin switching between cameras—2H modes very rapidly; 24H (and higher) modes, more slowly.
4. Press VIEW again to resume normal operation.

RECORDING/PLAYBACK

NOTE: *There are three ways of programming record functions: universal mode, switch pulse mode, and programmed mode. The simplest is universal mode, which is shown here.*

1. Set the VCR hour mode to match the multiplexer's normal recording speed. (Refer to the *Record Setup [Live/VCR or Display/Record Button]* section.)
2. Put the VCR into RECORD mode for 3-5 minutes.
3. Stop the VCR and rewind the tape to its starting point.
4. Place the multiplexer in VCR mode and press the VIEW button. Ensure the VIEW LED is lit.
5. Press PLAY.
6. Adjust tracking on the VCR until all distortion or snow disappears and the picture is clear. Make sure the black bar across the top of the monitor (with white dashes blinking on and off) is completely clear and noise free.
7. Press VIEW so the LED is not lit. The unit should decode the tape properly.

KBD4000/KBD4002 START-UP TEST

NOTE: *You must initialize the keyboard after a power failure, or after unplugging and reconnecting the keyboard.*

1. Press "1" on the keyboard, then UNIT. The blank LED should change to "1".
2. Press MAIN.
3. Press the 4- and 9-screen buttons. The picture on the monitor should change accordingly.

MX4000SVR (SINGLE MODE) START-UP TEST

NOTE: *You must initialize the keyboard after a power failure, or after unplugging and reconnecting the keyboard.*

1. On the keyboard, press 1 and then UNIT.
2. Press the MAIN button.
3. Press the 4- and 9-screen buttons. The picture on the monitor should change accordingly.
4. Press the SPOT button.
5. Press 1, Cam, 2, Cam. The monitor should display a full-screen image of camera 1 and then camera 2.

ALARM/RELAY/VCR

1. Select the quad display on the multiplexer. Four cameras should be displayed.
2. Short the alarm 1 contact (refer to Figure 20). The monitor that is set to respond to alarms should switch to camera 1 and the VCR should start recording.

OPERATION

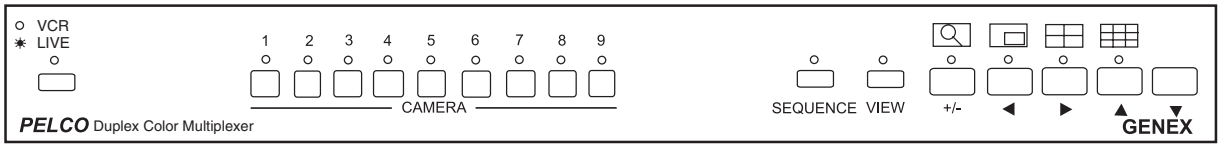


Figure 30. Front Panel, 9-Channel Duplex Color Multiplexer

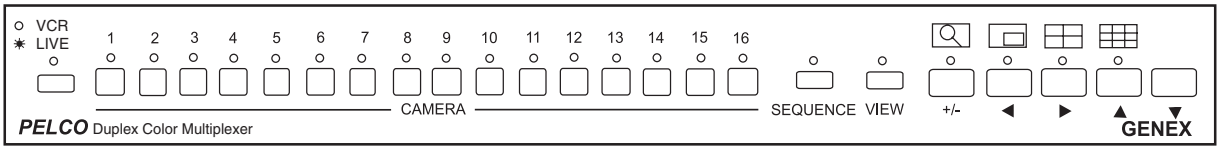


Figure 31. Front Panel, 16-Channel Duplex Color Multiplexer

NOTE: *To access the menu on a Pelco VCR from the multiplexer: put the multiplexer in VCR mode, press and release the VIEW button on the multiplexer, then press and release the DISPLAY button on the VCR.*

Refer to Figures 30 and 31 for views of the front panels. Monochrome front panels are the same except for the word “Monochrome” instead of “Color” in the lower left corner.

The simplex panels are the same as the duplex except for the word “Simplex” instead of “Duplex” in the lower left corner. Also, a DISPLAY/RECORD button replaces VCR/LIVE in the upper left corner. The three modes of operation selected by pressing the DISPLAY/RECORD button are RECORD, LIVE, and VCR. The LED illuminates in RECORD mode only. When the LED is off, look at the upper left corner of the monitor to see if the multiplexer is in LIVE or VCR mode.

When video loss occurs on a camera—whether the title display is on or off – “NO VIDEO” appears where the title should be and the red LED on the front panel for that camera flashes.

Usually, “NO VIDEO” appears on a blank screen. Occasionally, “NO VIDEO” is superimposed over a frozen image when video loss is first detected. Switching to another camera and back again blanks the screen except for the message.

Table E. Front Panel Controls

(The MODEL column shows whether the button/operation applies to the simplex or duplex multiplexers or both. S = Simplex, D = Duplex, S/D = both.)

BUTTON	MODEL	OPERATION	FUNCTION
LIVE/VCR	D	Press once.	Toggles main monitor display between live inputs and playback from VCR. In LIVE mode, the red LED lights.
		Press for 3 seconds.	Displays or exits the record setup menu on the main monitor.
DISPLAY/RECORD	S	Press once or twice.	Toggles main monitor display between record, live inputs, and playback from VCR. In RECORD mode, the red LED lights. Monitor displays “RECORD”, “LIVE”, or “VCR” to show the mode.
		Press for 3 seconds.	Displays or exits the record setup menu on the main monitor.
CAMERA	D	Press once.	Switches the selected camera to the main monitor (live or playback).
	S	Press once.	Switches the selected camera to the main monitor (record, live, or playback).
	S/D	Press twice.	Switches the selected camera to the spot monitor (live only).
	S/D	Press for 3 seconds.	Displays or exits the camera setup menu on the main monitor.
SEQUENCE	S/D	Press once.	Initiates or stops sequence on the main monitor.
		Press twice.	Initiates or stops sequence on the spot monitor.
		Press for 3 seconds.	Displays or exits the sequence setup menu on the main monitor.
VIEW	D	Press once.	In LIVE mode shows the multiplexed output to the VCR. Press again to exit.
	S	Press once.	In RECORD mode shows the multiplexed output to the VCR. Press again to exit.
	S/D	Press once.	In VCR mode shows the multiplexed input from the VCR. Press again to exit.
	D	Press twice.	Toggles alarm list on the main monitor between on/off. Clears list when toggles off.
	S	Press twice.	Displays alarm log on the main monitor.
	S	Press once.	Exits alarm log without clearing alarm log.
	S	Press twice.	Clears alarm list and closes the log.
	S/D	Press for 3 seconds.	Displays or exits system setup menu on the main monitor.
(Does not work in RECORD mode for simplex models.)	S/D	Press once.	Enables 2X zoom on displayed camera. Press the button a second time for 4X zoom. Press the button a third time to exit.

(Continued on next page)

Table E. Front Panel Controls (continued)

BUTTON	MODEL	OPERATION	FUNCTION
(Does not work in RECORD or VCR modes.)	S/D	Press once.	Displays a picture-in-picture insert on top of the full-screen display on the main monitor. Press button again to exit. Once in PIP mode, press for three seconds to enter programming mode.
(Does not work in RECORD mode for simplex models.)	S/D	Press once. Press for 3 seconds.	Displays a group of four cameras on the main monitor. Repeat pressing the button to display other groups. Enables programming mode to select four groups of four cameras to display on the main monitor.
(Does not work in RECORD mode for simplex models.)	S/D	Press once. Press for 3 seconds.	Displays a group of nine cameras on the main monitor. Press button again to display second group (16-channel models only). Enables programming mode to select two groups of nine cameras to display on the main monitor.
(16-channel models only) (Does not work in RECORD mode for simplex models.)	S/D	Press once. Press for 3 seconds.	Displays all 16 cameras on the main monitor. Enables programming mode to select the order of 16 cameras to display on the main monitor.

Table F. Operation Guide

(The MODEL column shows whether the command applies to the simplex or duplex multiplexers or both. S = Simplex, D = Duplex, S/D = both.)

OPERATION	MODEL	FRONT PANEL COMMAND	RESULT
Call a camera to the main monitor.	D S/D	1. Make sure the LIVE/VCR LED on the left of the front panel is ON. If the light is not on, press the LIVE/VCR button to toggle the light ON. 2. Press any CAMERA button.	Stops a sequence if one is in progress. Displays the camera on the main monitor.
Call a camera to the spot monitor.	S/D	Press any CAMERA button twice.	Displays the camera on the spot monitor.
Set main tracking.	S/D	1. Go to the Advanced System Setup menu. 2. Press the arrow buttons so the cursor highlights SPOT MONITOR DISPLAY. 3. Press the +/- button until TRACK MAIN is displayed. 4. Exit the Advanced System Setup menu.	Spot monitor follows the camera switching that occurs on the main monitor in single-camera mode. In multi-camera mode, the spot monitor switches to camera 1.

(Continued on next page)

Table F. Operation Guide (continued)

OPERATION	MODEL	FRONT PANEL COMMAND	RESULT
Call a group of cameras. (Does not work in RECORD mode for simplex models.)	D	1. Make sure the LIVE/VCR LED on the left of the front panel is ON. If the light is not on, press the LIVE/VCR button to toggle the light ON.	Displays the group of cameras on the main monitor.
	S	1. Make sure the monitor displays "LIVE". If it does not, press the DISPLAY/RECORD button once or twice until it does.	
	S/D	2. Press the button below the 4, 9, or 16 icon.	
	S/D	3. Continue pressing the button until the correct group is displayed.	
Display a picture-in-picture (PIP) insert. (Does not work in RECORD or VCR modes.)	S/D	1. Press the button of the camera you want to display full size. 2. Press the PIP icon button. 3. Press the button of the camera you want to display in the insert. 4. To change the display in the insert, press another camera button. 5. To exit, press the PIP icon button.	The full-size view appears on the main monitor with the PIP insert.
Display selected cameras in multi-screen modes.	S/D	This is accomplished through reprogramming. Refer to the *Multiple Camera Display Setup* section.	Changes which cameras appear in the multi-screen display.
Run a sequence of cameras on the main monitor.	D	1. Press the LIVE/VCR button to select live or tape playback mode. The LED is ON in live mode.	Starts the programmed sequence of individual cameras on the main monitor.
	S	1. To sequence individual cameras, make sure the monitor shows a full-screen view of any camera (all modes). To sequence groups of cameras, make sure the monitor shows a four- or nine-camera display (LIVE and VCR modes only).	
	D	2. To sequence individual cameras, make sure the monitor shows a full-screen view of any camera. To sequence groups of cameras, make sure the monitor shows a four- or nine-camera display.	
	S/D	3. Press the SEQUENCE button.	
Run a sequence of cameras on the spot monitor.	S/D	Press the SEQUENCE button twice.	Starts the sequence of individual cameras on the spot monitor.

(Continued on next page)

Table F. Operation Guide (continued)

OPERATION	MODEL	FRONT PANEL COMMAND	RESULT
Sequence multiple cameras in one location of a 4-, 9-, or 16-camera display. (Does not work in RECORD mode for simplex models.)	S/D	1. Select the desired multi-camera display. 2. Press and hold the multi-camera display button to enter multi-camera programming mode. A bar will appear in the first camera location. 3. Use the arrow buttons to move the on-screen bar to the desired camera location for sequencing, and press the SEQUENCE button to initiate the sequencing of all active cameras.	The sequence runs until the SEQUENCE button is pressed or until another camera or multi-camera display is selected.
Sequence PIP display. (Does not work in RECORD or VCR modes for simplex models.)	S/D	1. Push the button. 2. Push the SEQUENCE button.	Sequences all active cameras in the PIP display.
Stop a sequence.	S/D	Press the SEQUENCE button once or press any camera button to stop a sequence on the main monitor. Press the SEQUENCE button twice to stop a sequence on the spot monitor.	Stops the sequence. The monitor displays video from the camera on which the sequence stops.
Zoom on a camera. (Does not work in RECORD mode for simplex models.)	S/D	1. Press the camera button. 2. Press the button below the ZOOM icon. The display will zoom to 2X magnification. 3. Use the arrow buttons to control the zoom location. 4. Press the zoom button again to increase zoom to 4X. 5. To exit, press the zoom button a third time.	Stops a sequence if one is in progress. Displays a 2X or 4X zoom of the camera selected on the main monitor.
Record a tape.	D S	Recording is done automatically as long as a VCR is connected and it is in RECORD mode. Recording is done automatically as long as a VCR is connected and both the multiplexer and VCR are in RECORD mode. While the multiplexer is in RECORD mode (RECORD LED is on), you can only see a full-screen view of one camera (or one camera at a time if sequencing) on the main monitor.	Records all cameras connected to the multiplexer.

(Continued on next page)

Table F. Operation Guide (continued)

OPERATION	MODEL	FRONT PANEL COMMAND	RESULT
Play a tape.	D	1. Make sure the LIVE/VCR LED on the left of the front panel is OFF. If the light is not off, press the LIVE/ VCR button to toggle the light OFF.	Displays the recorded cameras in the selected format on the main monitor. ***NOTE:*** *Pelco Genex multiplexers can normally decode tapes made with other manufacturers' multiplexers. However, DM models DM/SPQ4/S/N/090 and DM/SPC4/D/N/16M must be properly programmed to create tapes that are compatible with Genex multiplexers. (Refer to Tech Tip 00-3038 for programming details.) Tapes made with DM model DM/SPR2AS/C/M/M are incompatible.*
	S	1. Make sure the monitor displays "VCR". If not, press the DISPLAY/ RECORD button until the monitor shows VCR mode. 2. Turn on the VCR and press the PLAY button.	
	S/D	3. Press the button of the camera you want to view, or press a button below the 4, 9, or 16 icons for multiple camera playback.	
Call a camera or run a sequence of cameras on the auxiliary monitor.	D	Program the monitor in the Advanced System Setup menu.	Monitor responds to programming instructions.
Deactivate alarm(s) for camera displayed on the **main** monitor.	S/D	1. For a single alarm, press the VIEW button **once**. 2. For multiple alarms, press the VIEW button once each time a camera with an alarm sequences to the main monitor.	Deactivates the alarm. Deactivates the alarms.
Deactivate alarm(s) for camera displayed on the **spot** monitor.	D	1. For a single alarm, press the VIEW button **twice**.	Deactivates the alarm.
	S	1. For a single alarm, press the VIEW button once.	Deactivates the alarm.
	D	2. For multiple alarms, press the VIEW button twice each time a camera with an alarm sequences to the spot monitor.	Deactivates the alarms.
	S	2. For multiple alarms, press the VIEW button once each time time a camera with an alarm sequences to the spot monitor.	Deactivates the alarms.

(Continued on next page)

Table F. Operation Guide (continued)

OPERATION	MODEL	FRONT PANEL COMMAND	RESULT
Open or close a log of the last 72 alarms.	S/D	1. Press the VIEW button twice to display the alarm list. (If there are more than 18 alarms logged, use the up/down arrows to scroll through the list.) 2. Do one of the following to close the log.	Displays or removes alarm list on the main monitor.
	S/D	a. Press the VIEW button twice to clear the list and close the log.	
	D	b. Press any front panel button (except SEQUENCE) once to close the log without clearing the alarm list.	
	S	c. Press any camera or the VIEW button once to close the log without clearing the alarm list.	
Display and record alarms and/or activity detection.	D	Program alarms in the System Setup, Record Setup, Camera, and Advanced System Setup menus. Program activity detection in the System Setup, Camera, and Advanced System Setup menus.	Main, spot, and auxiliary monitors respond to programming instructions. If there are multiple alarms/activity detection, monitors will sequence cameras. Monitors will return to previous operation about 15 seconds after all activity detection has stopped or after alarms have timed out. In alarms/activity mode, any alarm will take precedence and override the camera being displayed.
	S	*Same as for duplex command above with the following addition:* Multiplexer must be in RECORD mode to record alarms or activity.	Same as duplex result.

TROUBLESHOOTING

If you have difficulty operating your system, run through the following checklist to see if you can solve the problem.

1. Are the keyboard switches set properly?

2. Is the equipment wired properly?

3. Are the menu options in the multiplexers and server set properly?

4. For the duplex models, is the LIVE/VCR LED on for live video and off for tape playback? For the simplex models, has the multiplexer been set to the correct mode using the DISPLAY/RECORD button?

5. The main monitor displays multiple camera images. The spot monitor displays full-screen views only.

6. SPOT MONITOR must be selected to operate presets, patterns, and auxiliaries.

7. For duplex models, programming controls the auxiliary monitor. You cannot control it from the keyboard or from the front panel of the multiplexer.

8. Tape playback can be done only on the main monitor and only while in VCR mode.

9. Moveable cameras must be Coaxitron compatible and the proper Coaxitron format selected in the Camera menu of the multiplexer. If the proper format is not selected, the camera will either not move or have sluggish control.

10. Moveable cameras can be operated with the joystick or pan and tilt keys:

    - From the main monitor if the spot monitor is programmed to track the main monitor.
    - From the spot monitor if the spot monitor is chosen.

    Also, the camera will move on the main monitor if the same camera is being shown on both the main and spot monitors.

11. The position of switch 7 on the keyboard determines how you call cameras.

    - If the switch is ON, all cameras are addressed consecutively. Do not count just the cameras installed. Count 16 camera inputs per multiplexer, even if a multiplexer has only 9 inputs. The first input of multiplexer 1 is always camera 1, the first input of multiplexer 2 is always camera 17, the second input of multiplexer 3 is always camera 34.

    - If the switch is OFF, cameras are addressed in groups of 9 or 16 according to the address of the multiplexer. Select a multiplexer (for example, number 3), then choose a camera (1-9 or 1-16).

12. If you have one multiplexer, it must be the master. If you have more than one multiplexer, any one of them must be the master and all others slaves (Advanced System Setup menu of multiplexer).

    If you have a keyboard and switch 4 is OFF (polled communication mode), one multiplexer must be the master and all others slaves. If switch 4 is ON (non-polled mode), all multiplexers are slaves and the keyboard is the master.

13. If you have more than one multiplexer, they must have different addresses (Advanced System Setup menu of multiplexer).

14. If you have a server, the address of the multiplexer must correspond to the input to which it is connected on the server. For example, if the multiplexer goes to input 4 on the server, the multiplexer must be address 4.

15. If you have a server, each keyboard must have its own address.

16. If you have a server, each keyboard controls its corresponding monitors. In single mode, keyboard 1 controls monitor 1, keyboard 2 controls monitor 2, etc. In paired mode, keyboard 1 controls monitor 1 (main) and monitor 2 (spot), and keyboard 3 controls monitor 3 (main) and monitor 4 (spot). In paired mode, keyboards 2 and 4 are not used.

17. If you have a server and cannot change between full-screen and multi-screen views on the main monitor, check the MAIN MONITOR CONTROL setting in the server's Monitor menu.

18. Adjust the VCR's head tracking control until the picture stabilizes if:

    a. the picture appears jittery when the multiplexer is in VCR playback mode, or

    b. one camera view sequences out of order when the multiplexer is in multi-screen VCR playback mode.

19. If you have a Genex/KBD4000/Esprit with wiper combination, in order to make the wiper function when Genex is in Track Main mode, you must do the following:

    a. Call the spot monitor.
    b. Call the camera.
    c. Press the auxiliary ON key.

RESET

To reset the multiplexer:

1. Unplug the power cord.

2. Hold down the VIEW button on the multiplexer's front panel while plugging the power cord into an electrical outlet. When the Initialization menu appears, release the VIEW button. The monitor indicates PLEASE WAIT and begins a 20-second countdown. When the countdown finishes, this menu disappears, all programming menus are at their default settings, and the multiplexer is ready for use.

3. Reprogram the multiplexer. Refer to the *Programming* section.

SPECIFICATIONS

VIDEO

Input Level:	1 Vp-p, composite
NTSC:	525 lines, 60 fields/second
PAL:	625 lines, 50 fields/second
Digital Image:	768 (H) x 512 (V) pixels full screen 1536 bytes horizontal memory 26 MB display image memory 8-bit luminance, 256 shades of gray 8-bit chrominance, over 16 million colors
Format:	CCIR 601 4:2:2
Sampling Rate:	13.5 MHz
Geometric Error:	Less than 1 percent, all modes
Resizing:	Multi-element horizontal and vertical finite impulse response
Analog Processing	
Bandwidth:	20 MHz
Differential Phase:	Less than 2 degrees
Differential Gain:	Less than 2 percent
Character Generator:	Programmable, bit mapped

ELECTRICAL

Operating Voltage:	120 VAC (+15/-30%), 50/60 Hz or 230 VAC (+15/-30%), 50/60 Hz
Power:	Less than 25 watts
Video Inputs:	Nine or sixteen BNC, looping with programmable termination, 75 ohms or Hi-Z
Monitor Outputs:	Two (simplex) or three (duplex)
Main (duplex):	BNC, 75 ohms 4-pin mini-DIN, YC output (SVHS)
Spot:	BNC, 75 ohms
Main (simplex):	BNC, 75 ohms
Aux (duplex):	BNC, 75 ohms
VCR Inputs:	One
VCR In:	BNC, composite, 75 ohms 4-pin mini-DIN, YC input (SVHS)
VCR Outputs:	One
VCR Out:	BNC, composite, 75 ohms 4-pin mini-DIN, YC input (SVHS)
Alarm Inputs:	Sixteen individually programmable for NO or NC
Alarm Output:	One Form-C relay, 0.5 A continuous, 1.0 A momentary

GENERAL

Operating Temperature:	32° to 122°F (0° to 50°C)
Relative Humidity:	90% (non-condensing)
Construction:	Aluminum
Finish:	Black
Dimensions:	1.75 (H) x 17.2 (W) x 12.2 (D) inches (4.45 x 43.69 x 30.99 cm)
Weight:	10.6 lb (4.8 kg)

(Design and product specifications subject to change without notice.)

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REGULATORY NOTICES

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment. Exceptions to this warranty are as noted below:

- Five years on Pelco manufactured cameras (CC3500/CC3600/CC3700 and MC3500/MC3600 Series); two years on all other cameras.
- Three years on Genex® Series (multiplexers, server, and keyboard).
- Two years on all standard motorized or fixed focal length lenses.
- Two years on Legacy®, Camclosure® Camera Systems, CM6700/CM6800/CM8500/CM9500/CM9740/CM9760 Matrix, DF5 and DF8 Series Fixed Dome products.
- Two years on Spectra®, Esprit®, and PS20 Scanners, including when used in continuous motion applications.
- Two years on Esprit and WW5700 series window wiper (excluding wiper blades).
- Eighteen months on DX Series digital video recorders.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico:

Intermediate Consignee
American Overseas Air Freight
320 Beach Road
Burlingame, CA 94010
USA

Ultimate Consignee
Pelco
3500 Pelco Way
Clovis, CA 93612-5699
USA

REVISION HISTORY

Manual #	Date	Comments
C1920M	5/98	Preliminary version released for beta evaluation.
	6/5/98	Preliminary version revised to add password and clarify instructions.
	6/10/98	Preliminary version revised to add more monitor information, expand programming menus and operation, and add troubleshooting section.
	7/98	Original version.
	7/7/98	Revised menu structure.
	12/98	Updated software and added certifications.
	3/99	Revised Figures 7, 8, and 10. Added *Pelco's Time-Lapse VCRs* section.
C1920M-A	8/00	Included information for simplex models. Reorganized manual.
C1920M-B	3/01	Added new figure 15 and instructions for connecting a multiplexer to a CM6700 with a single keyboard. Added instructions on activating an Esprit wiper in the Troubleshooting section. Revised Table B.
C1920M-C	5/02	Added section 8 to installation. Removed all references to KBD4000V. Updated Safeguards and Warnings, and Warranty.
C1920M-D	4/03	Added S-mark certification.

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